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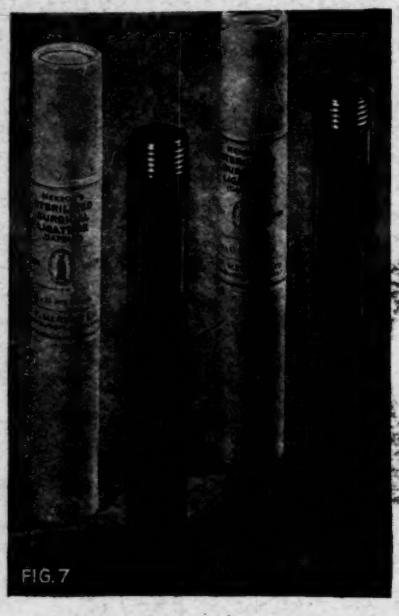

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY NOVEMBER 8 1941

PREPARATION AND USE OF CONCENTRATED RED CELL SUSPENSIONS IN TREATMENT OF ANAEMIA

BY

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The establishment of blood banks has greatly increased the use of blood transfusions, not only in the most urgent cases of haemorrhage and shock and for the more severe and resistant cases of chronic anaemia but also as a means of shortening the convalescence of patients suffering from anaemias of less severity, many of whom would probably recover ultimately without resort to such treatment. From the point of view of the individual patient as well as from that of national economy it may often be justifiable to utilize the blood of one healthy person to enable another to return to work at an earlier date than would otherwise be possible; but the growing tendency to substitute intravenous transfusion of blood for the oral administration of iron results in a constant drain on the supply of blood now urgently required for preparation of plasma. The transfusion habit now being established may also cause serious embarrassment to the blood transfusion services in peacetime, for such a useful therapeutic weapon will not willingly be surrendered at the conclusion of hostilities.

Large-scale preparation of plasma from stored blood, however, has made available considerable quantities of red cells in concentrated form. These red cells, amounting to about 50% of the original volume of whole blood, are usually discarded, which in view of their potential value in the treatment of anaemia is particularly regrettable.

Suspensions of red cells separated from the plasma have been used in the past for the treatment of anaemia, but with few exceptions these suspensions were diluted with saline to such an extent as to make them more dilute than normal blood (Robertson, 1918). The use of the red cells in concentrated suspensions has recently been described by MacQuaide and Mollison (1940). At the time their article was published a few cases of anaemia had been treated by the Liverpool Regional Blood Transfusion Service with similar concentrated suspensions, and since then these have been used in increasing amounts.

Preparation of the Suspensions

At the regional laboratory of our transfusion service plasma is withdrawn from all bottles of blood, irrespective of group, on the seventh day of storage, up to which time they have been available for transfusion as "whole blood" wherever required. The stocks of blood stored in each individual hospital, which under present conditions are considerably in excess of the normal transfusion requirements of civilian medical practice, are similarly processed. The technique of plasma separation is the "closed" method described by Edwards and Davie (1940). In this process the plasma is aspirated through a long needle inserted through the perforated metal cap and rubber diaphragm which closes the bottle. After separation of the plasma (a process which can be performed aseptically) the aspirating needle is plunged to the bottom of the red cell layer and aspiration of the concentrated red cells is continued into a fresh sterile bottle. The layer of gelatinous material which normally lies on the surface of the red cells and consists of leucocytes, platelets, and fibrin is carefully left behind in the blood bottle. The last remaining drops of cells in the needle and tubing are transferred to a tube of citrate-saline solution for grouping and cross-matching. The red cells of another bottle of blood of the same group, and, if necessary, of a third bottle, are added to those of the first, a specimen of these cells being similarly retained for grouping, etc. A bottle of concentrated red cells will therefore consist of contributions from two or three donors. The citrated sample tubes of cells are attached by a rubber band to the neck of the bottle of concentrated cells. Cross-matching of each sample with the serum of the patient is occasionally undertaken by the clinician, but is generally performed in the laboratory before the bottle is issued for use. These concentrated suspensions are usually prepared only at the request of clinicians, but it is sometimes convenient to anticipate the demand by preparing a small stock of bottles of assorted groups. These are stored in the refrigerator for forty-eight hours, after which time those not used are discarded.

Nature and Composition of Concentrated Red Cells

Specimens of concentrated red cell suspensions prepared by the present method show considerable variations in their haemoglobin and cell content. This is mainly due to individual differences in the rate and extent of cell sedimentation in citrated blood under conditions of storage.

The following figures are quoted as being fairly typical of the results obtained from examination of a sample of concentrated red cells:

Haemoglobin (Haldane)	150%
Red cells	8,500,000 per c.mm.
White cells	3,000 per c.mm.
Corpuscular volume (Wintrobe)	85% (normal for whole blood, 45%)

The most important difference between stored blood and fresh blood is the increased corpuscular fragility of the former. This is mainly due to the fact that the anti-coagulant solution of 2.5% sodium citrate is hypertonic and produces in the blood corpuscles a state of increased intracellular osmotic tension. When such red cells are placed in contact with isotonic saline solutions they exhibit greatly increased fragility, since by comparison with their contents their new surroundings are now hypotonic (Maizels and Whittaker, 1939). Another possibility is that venous blood, by reason of its high CO_2 content, is somewhat more fragile than either capillary or arterial blood (Whitby and Hynes, 1935).

It was suggested by MacQuaide and Mollison that a small amount of hypertonic (1.1%) sodium chloride solution should be added to the suspensions in order to reduce their viscosity and thus facilitate their administration. Before adopting this procedure ourselves a few preliminary experiments were performed to determine the resistance of blood cells to 1.1% saline solution after they had been stored for seven days. Red cell counts of specimens of stored blood were made, using as a diluting fluid normal human serum of the same blood group. Duplicate counts were also performed on the same specimens, using 1.1% saline solution as the diluent. Any reduction of the red cell count in the saline compared with that in serum would indicate the degree of haemolysis that had occurred in the former solution. The counting pipettes, containing the red cells diluted 1 in 200 with the respective diluents, were left at room temperature for fifteen minutes before being finally shaken and counted. In one such experiment the discrepancy between the results of the two counts amounted to as much as 1.7 millions per c.mm., or approximately 20% of the total. This represented a degree of *in vitro* haemolysis that would be incompatible with safety in a bottle of blood intended for transfusion. It was therefore decided that the addition of 1.1% saline to suspensions of concentrated red cells as prepared by us would be inadvisable. In any case, this dilution has not been found necessary, as no insuperable transfusion difficulties have been experienced on account of increased viscosity of the concentrated suspensions.

The apparent increase in the fragility of stored red cells does not appear to have the clinical significance that one might be led to expect. There seems to be no direct relation between the fragility of the red cells, as measured by the usual test of resistance to hypotonic solutions of sodium chloride of varying concentrations, and the rate of their destruction in the body of the recipient. This contention is supported by recent investigations into the survival time of stored blood cells after transfusion experiments which have shown only slightly longer survival of fresh cells as compared with those stored for a week, in spite of the greatly increased fragility of the latter (Mollison and Young, 1940).

Administration

Although the increased viscosity of suspensions of concentrated red cells slows the flow through the delivery apparatus, no modification of the standard blood transfusion outfit as supplied by E.M.S. transfusion centres is necessary beyond lengthening the transfusion rubber tubing to provide a greater head of pressure. When giving concentrated red cell suspensions in any quantity it is important that the flow be regulated to approximately 100 c.cm. an hour to avoid the risk of cardiac embarrassment by rapid addition of a viscous fluid to the circulating blood, particularly as the myocardium of an anaemic person may have undergone pathological changes which impair its efficiency.

The indications for the administration of concentrated red cell suspensions are such that it should seldom be necessary or even advisable for them to be given as an urgent or emergency measure, since supplies of plasma and Group IV (O) whole blood are available to every hospital for emergency transfusions. Concentrated suspensions should therefore be used only for cases of chronic anaemia which require rapid replacement of haemoglobin and red cells with minimal increase of circulating blood volume.

Results of Treatment

Material for over 150 transfusions of concentrated red cells has been issued in the past eight months. Of these transfusions over sixty have been administered to two patients suffering from aplastic anaemia, but owing to certain special features these cases have been omitted from the present series. Information regarding responses to transfusions, in terms of elevation of haemoglobin percentages and of changes in the red cell counts, has been procurable in only 38 transfusions, administered to 35 patients. These results for convenience of comparison have been tabulated, together with other data relevant to the cases, in Table I. Fair comparison of these results is unfortunately rendered difficult by the fact that blood counts and haemoglobin estimations, although in most cases performed by experienced pathologists, include readings taken by several different standards and under varying circumstances. These individual findings are therefore more than usually liable to error, and are of somewhat limited value as data upon which scientifically accurate conclusions may be based. They are presented here simply as evidence from which our own clinical impressions were formed.

TABLE I.—*Summary of Results of Transfusions*

Case No.	Amount given (c.cm.)	Hb% Before	Rise in Hb %	R.B.C.s before Transfusion (millions per c.mm.)	Rise in R.B.C.s (millions per c.mm.)	Rise in Hb % per 500 c.cm. conc. R.B.C.s	Condition
2	900	50	30	—	—	17	Hodgkin's disease
,,	500	80	(−5)	—	—	−5	Severe exacerbation of the disease at time of transfusion
3	900	45	20	2·56	0·89	11·1	Septic abortion
4	800	44	18	2·67	1·2	11·25	Haemorrhage
5	500	18	14	—	—	14	,,
6	800	56	6	3·32	0·39	3·75	Recurrent peptic ulcer
8	900	48	18	2·8	0·61	10	Septic abortion
11	900	26	24	2·17	—	13·3	Anaemia and pyrexia
12	1,000	40	20	2·5	1·6	10	Haemorrhage
14	1,000	40	7	1·75	0·45	3·5	Pernicious anaemia
15	500	35	35	—	—	35	Chronic haemorrhage from cervical polyp (operation was performed on same day as the transfusion)
17	1,000	30	6	2·53	1·3	3	Carcinoma ventriculi; haematemesis
18	1,000	35	0	—	—	0	Aplastic anaemia (fatal)
19	1,000	28	17	2·43	0·75	8·5	Septicaemia : secondary haemorrhage
21	1,000	35	23	2·75	1·25	11·5	Hysterectomy
22	700	35	10	2·02	0·38	7·1	Amputation (septic)
24	800	26	14	2·12	1·08	8·8	Severe anaemia
25	1,000	58	26	5·29	(−·14)	13	Gastric ulcer : partial gastrectomy
26	1,000	56	24	3·24	—	12	Puerperal anaemia
27	950	44	30	2·87	1·92	15·8	Uterine fibroid
29	2,000	24	65	—	—	16·25	Pernicious anaemia
30	860	37	23	2·46	1·02	14·25	Leukaemia; haemorrhage
33	350	28	0	2·22	(−·31)	0	Anaemia (post-natal)
,,	1,000	48	18	2·92	0·74	9	Anaemia
36	1,000	20	18	0·87	0·56	9	Severe anaemia
37	500	52	12	2·9	0·62	12	Haemorrhage—source not specified
39	1,000	55	22	3·55	0·55	11	Sepsis
42	500	50	8	3·15	0·53	8	Gastric ulcer
45	1,000	40	30	3·14	2·42	15	Carcinoma ventriculi
47	900	28	14	1·01	2·34	7·8	Pernicious anaemia
,,	900	49	16	2·35	0·7	8·9	
48	850	45	33	2·65	2·21	19·4	Haemorrhage (haematemesis)
52	900	30	25	3·28	—	13·9	Ulcerative colitis
56	500	30	35	—	—	35	Haemorrhage (metropathia haemorrhagica)
57	1,000	40	15	2·0	1·1	7·5	Anaemia
58	500	60	10		—	10	Septicaemia
59	600	60	10		—	8·3	,,
61	1,000	23	23		—	11·5	Pernicious anaemia

Owing to the wide variety of conditions which have been treated with concentrated red cells these results have been classified into four main groups, as follows:

Group I: Post-haemorrhagic anaemias (7 cases).
Group II: Anaemias associated with severe infection (6 cases).
Group III: Anaemias of pregnancy and the puerperium (4 cases).
Group IV: Dyshaemopoietic anaemias (pernicious, aplastic, and idiopathic hypochromic anaemias) (7 cases, 8 transfusions).

To compare the individual responses, the percentage rise in haemoglobin for each case was calculated for a "standard transfusion" of 500 c.cm. (approximately one bottle) of concentrated red cell suspension. The mean response to a standard transfusion was obtained for each group of cases, and graphs were prepared by plotting these individual results in terms of percentage rise of haemoglobin per 500 c.cm. of suspension. These, with the mean in each group, are illustrated in Figs. 1 to 4.

Graphs showing Calculated Percentage Rise of Haemoglobin per 500 c.cm. of Concentrated Red Cell Suspension. (The mean of each series is represented by a horizontal broken line at the appropriate level. Figures along base line refer to case numbers.)

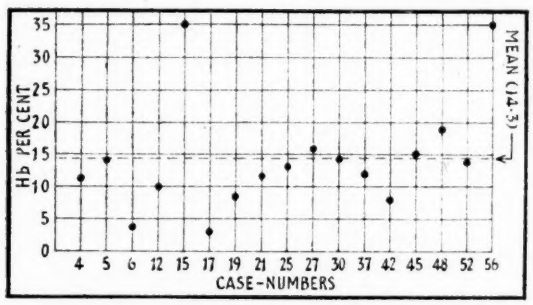

FIG. 1.—Group I: Post-haemorrhagic anaemias.

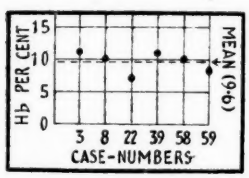

FIG. 2.—Group II: Anaemias associated with severe infection.

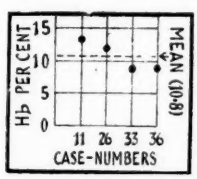

FIG. 3.—Group III: Anaemias of pregnancy and puerperium.

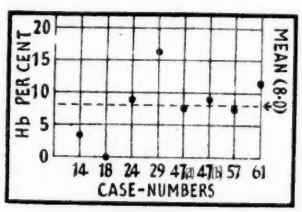

FIG. 4.—Group IV: Dyshaemopoietic anaemias.

In the first, or post-haemorrhagic, group the results show a wide range of scatter about the mean. Allowance for 5% error in haemoglobin estimation, however, places all except four of the readings within reasonable limits of variation. The four readings which fall outside these limits include two cases with very low responses (Nos. 6 and 17), both of which were suffering from chronic gastric complaints, one being a carcinoma and the other a recurrent peptic ulcer that proved fatal two weeks after transfusion. The other two cases (Nos. 15 and 56) showed abnormally high responses to transfusion. These were both cases of chronic uterine haemorrhage of non-malignant origin which were transfused immediately before operation, and the second haemoglobin readings of which were performed soon after operation. Omission of these four cases from the series would reduce the mean of this group from 14.3% to 12.8% haemoglobin per 500 c.cm. of concentrated blood.

The second group of post-infective anaemias, although too small to provide conclusive evidence, shows a surprisingly high average response to transfusion. From the subsequent histories of these few patients it appears that cases of septicaemia associated with anaemia are very much improved by transfusion therapy. We now therefore recommend, for severe cases of this kind, repeated transfusions of concentrated red cell suspensions until the haemoglobin is over 60%. When this level has been attained fresh whole blood, which is richer in antibodies and contains active leucocytes, is of greater benefit, and transfusion with this should be continued until the haemoglobin is at least 90%. This treatment should, however, be additional to rational anti-infective measures.

The results of four cases of anaemia associated with pregnancy and the puerperium are shown in Fig. 3. Little may be deduced from our findings in these cases, but clinicians have been impressed with the value of concentrated red cell transfusions in rapidly rehabilitating patients who might otherwise remain in a state of chronic debility and vague ill-health as a result of nutritional or post-haemorrhagic anaemia.

The graph illustrating the dyshaemopoietic group (Fig. 4) shows a considerable variation in the responses of the individual cases. Two cases showing very poor results (Nos. 14 and 18) were respectively severe pernicious anaemia with subacute combined degeneration of the cord (which ultimately made a good recovery) and a case of aplastic anaemia. The latter patient failed to respond to transfusion treatment, and died a few weeks later. There is reason to believe that in both these cases the haemoglobin estimations were faulty. Their omission from the series would have raised the mean increase of haemoglobin per 500 c.cm. transfusion from 8% to 10% for this group.

From these results we are able to conclude that, irrespective of the nature of the condition causing the anaemia, transfusion with one bottle of 500 c.cm. of concentrated red cell suspension raises the haemoglobin between 10% and 12%. Exceptions to this occur, and are usually low responses due to a rapid exacerbation in the factors causing the anaemia. Unexpectedly high results have in some cases been attributable to operations which have not only removed the cause of the anaemia but may also have produced some degree of haemoconcentration.

Reactions

Reports of the incidence of reactions following the use of concentrated red cell suspensions were obtained regarding 77 transfusions which were given to 61 patients. In all, fifteen reactions of all grades were noted, the gross reaction rate thus being 19.5%. Reference to Table II shows that this series consisted of five Grade I reactions (slight elevation of temperature), two Grade II reactions (pyrexia with slight shivers but no definite rigor), and seven Grade III reactions (definite rigors associated with rise of temperature).

This apparently high rate of rigor production (amounting to 9.1% of all transfusions) may be attributable to the peculiar circumstances in which the Liverpool Regional Transfusion Service was placed during three months of the period under review. Enemy action had destroyed the apparatus necessary for the production of distilled water, and the supply of 2.5% sodium citrate solution had therefore to be obtained from other sources, under circumstances that made it impossible to guarantee the exclusion of pyrogens. To this was attributed the fact that during this period the reaction rate (all three grades) among patients receiving stored whole blood had risen to an exceptionally

high figure—more than double the incidence before this period. Of the 77 transfusions of concentrated red cells 21 were given during this three-month period, and accounted for four out of the seven Grade III reactions and three others of less severity. The exclusion of all transfusions administered during this period gives a Grade III reaction (rigor) incidence of 3 in 56 transfusions, or 5.35%.

TABLE II.—*Details of Cases showing Reactions to Transfusion*

Case No.	Sex	Age	Group	No. of Transfusions	Hb % Before	Amount of C.B. given (c.cm.)	Hb % After	Details of Reaction	Diagnosis and Results
Grade I Reactions (T. 100° or over, Without Symptoms)									
16	F	—	2	1	58	1,000	—	Temp. 101° following day	Post-natal anaemia
29	M	63	2	2	24	2,000	89	Temp. 100·2° after first transfusion	Pernicious anaemia
48	M	65	2	2	45	850	78	Temp. 100° after second transfusion	Haematemesis
50	M	28	4	1	—	500	56	Temp. 101°	Haematemesis. Ordinary blood given, with no reaction
52	F	32	4	1	30	900	55	Temp. 100°	Ulcerative colitis
Grade II Reactions (T. over 100°, with Slight Shivering)									
63	M	39	4	2	50	400	—	Slight rigor after first transfusion	Haematemesis
47	F	46	4	2	28	900	42	Slight rigor after first transfusion	Aplastic anaemia
Grade III Reactions (Definite Rigors, with Pyrexia)									
1	M	—	4	2	50	500	—	Rigor ; temp. 101° after first 100 c.cm.	Papilloma vesicae. Remainder of transfusion given next day
15	F	43	4	1	35	500	70	Rigor ; temp. 101° following day	Cervical polyp
22	M	—	4	1	35	700	45	Rigor (reaction)	Sepsis and amputation
33	F	30	3	2	28	350	28	Rigor with first transfusion	Post-natal anaemia. No reaction with second transfusion
43	F	37	3	2	35	500	—	Rigor with first transfusion	Severe septicaemia. Rigor ? not due to transfusion. Given old suspension on second occasion and became jaundiced
55	F	54	4	1	50	1,000	—	Rigor ; temp. 102°	Carcinoma ventriculi ; pyrexial before transfusion
60	M	37	2	1	—	400	—	Rigor ; temp. 103°	Haematemesis. Improved
Grade IV Reactions (Anaphylactic Phenomena, etc.)									
31	F	26	—	1	34	500	—	Urticarial oedema	Complete abortion. Oedema subsided with adrenaline

Our gross reaction rate thus appears to have been considerably higher than it might have been in the absence of any disturbance of our laboratory routine. Corrected for this, the impression is confirmed that, as stated by MacQuaide and Mollison, the incidence of reactions to transfusions of concentrated red cell suspensions is no higher, and probably is lower, than that produced by the use of stored whole blood.

In addition to the febrile reactions discussed above there remains a group of reactions which appear to be due to some hypersensitivity on the part of the recipient to some component of the transfused fluid. They are not peculiar to concentrated red cells, for they occur also after plasma transfusions. These reactions would seem to be of an allergic nature, as is illustrated by the case reported in Table II under the heading "Grade IV Reactions." In this case no harm was done, as the oedema that resulted subsided after the administration of adrenaline. One fatal reaction, which appeared to have been due to a similar mechanism, occurred following one transfusion of concentrated blood, and owing to its importance the case is here reported in full.

A woman aged 46 (Case 35) was admitted to hospital with a history of menorrhagia, and complaining of dyspnoea and palpitations ; there were also signs of anaemia. Blood examination shortly after admission showed hypochromic anaemia, the haemoglobin being 35% and the red cell count 2.3 millions per c.mm. The menorrhagia was found to be due to a cervical polyp, and as a preliminary to operation the patient was given a transfusion of concentrated red cells, starting at 6.45 p.m. on April 2, 1941. Three hours later she was rather restless, but felt drowsy. Six hours after the transfusion was begun she was pale and cyanosed, with deep stertorous respirations. The heart rate was 160 per minute and the radial pulse not palpable. The transfusion, almost completed, was then stopped, and the patient given morphine, grain 1/6, oxygen, and coramine. She died in coma at 1.45 a.m., seven hours after the start of the transfusion. Post-mortem examination revealed a large, pale, flabby, and grossly dilated heart, with numerous ecchymoses, averaging about 5 mm. in diameter, scattered upon the surface of the interventricular septum. Some of these petechiae appeared to involve the left branch of the bundle of His. There was no lesion of the heart valves or of the coronary arteries, and no evidence of thrombosis of the saphenous vein. The spleen was enlarged to about double its normal size. Incompatibility of blood was excluded by direct cross-agglutination tests performed before transfusion and repeated afterwards, while the slow rate at which the transfusion was given excludes the possibility of primary myocardial failure such as may have resulted from sudden loading of the right heart with transfused blood. The presence of petechial haemorrhages in the myocardium renders it probable that death was due to sudden disturbance of the conducting mechanism of the ventricles. While these changes may have been due to severe anaemia alone, in view of the circumstances under which death occurred it is possible that they were due to an anaphylactoid reaction following the transfusion.

This case emphasizes the importance of avoiding the use of blood likely to produce reactions of an allergic nature, but unfortunately we are not yet in a position to detect the sensitive patient in advance. The only precautions at present available against such accidents consist in scrupulously excluding from the panel of donors all those with a history of allergic manifestations and, where practicable, performing intradermal skin tests upon prospective recipients with a similar history, using a few minims of the transfusion fluid as an antigen.

Summary

The preparation and properties of concentrated red cell suspensions are described, and the advantages of their use in preference to whole blood in certain cases are discussed.

Results of 77 transfusions are reported, special reference being made to the percentage rise of haemoglobin per 500 c.cm. of suspension, and to the effect, if any, of the patient's clinical condition upon this result.

The frequency of reactions to this form of transfusion is calculated, and found to be considerably lower than that occurring when stored whole blood is used. One fatal reaction is described, and its aetiology briefly discussed.

We are indebted to numerous physicians and surgeons on the staffs of Merseyside hospitals, and to the medical superintendents of municipal hospitals in Liverpool, Birkenhead, and Wirral, for their permission to consult their case records, and to those resident medical officers and house-surgeons who have themselves contributed much valuable information about their patients. We are also grateful to Drs. Joy Cronin-Lowe, Sheila Kenny, and J. C. Millar for having provided us with their own personal observations of several cases. Finally, we are glad to record our appreciation of the work of Mr. J. Stainton and other members of the laboratory and secretarial staff of the Regional Blood Transfusion Centre, without whose assistance the present work could not have been completed.

REFERENCES

Edwards, F. R., and Davie, T. B. (1940). *British Medical Journal*, **2**, 73.
MacQuaide, D. H. G., and Mollison, P. L. (1940). Ibid., **2**, 555.
Maizels, M., and Whittaker, N. (1939). *Lancet*, **2**, 1219.
Mollison, P. L., and Young, I. M. (1940), *Lancet*, **2**, 420.
Robertson, Oswald H. (1918). *British Medical Journal*, **1**, 691.
Whitby, L. E. H., and Hynes, M. (1935). *J. Path. Bact.*, **40**, 219.

MYCOSIS FUNGOIDES TREATED BY MALARIA, TERMINATING IN HODGKIN'S DISEASE

BY

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On May 29, 1931, a dairyman aged 45 presented himself at the skin department of the Middlesex Hospital with a seven-months-old eruption which had begun on the face and eyebrows and later extended to the pubic area, hands, wrists, and legs. The eruption was dry and scaly, except for some areas where moisture and weeping had occurred, thus conforming in its distribution and type to a seborrhoeic dermatitis, the diagnosis recorded at the first visit. As his progress covers a series of admissions to and discharges from the skin and medical wards the sequence of events can best be recorded under four different headings.

First Admission : May 30, 1931, to February 25, 1932

The initial phase of this remarkable history was represented by an eczematous eruption, in places dry, in other regions moist and weeping. The rash was considerable in extent, involving the face, arms, hands, trunk, and legs, and because of the dry scaly appearance in some places and the pronounced flexual distribution was labelled "seborrhoeic eczema." There were during this period fluctuations in the degree and extent of the eruption, with at times marked improvement, followed by an unexpected and disappointing relapse. The degree of itching was considerable and disproportionate, which might have hinted at things to come; and in places, for example over the arm flexures, the margins of the eruption presented an unusual raised or scalloped appearance, contrasting with the more characteristic eczema elsewhere. Although they have no special significance, it may be recorded that in September, 1931, abscesses developed in the calves of both legs, requiring surgical treatment. The Wassermann reaction was negative, and a blood count made on October 6 showed slight anaemia—9,800 leucocytes per c.mm., with the following differential count: polymorphs 61.5%, lymphocytes 23.5%, large mononuclears 0.5%, eosinophil cells 13.5%, and mast cells 1%. As in February, 1932, only some insignificant traces of the eczematous eruption remained, the patient was discharged from the ward to attend the out-patient department. In June, 1932, it was noted that on the trunk there were patches suggestive of the pre-mycotic phase of mycosis fungoides, but this diagnosis was not confirmed and definitely established until March, 1933.

Second Admission : February 23, 1934, to December 5, 1934

Mycosis fungoides was now present in an extensive form, including large sheets of pre-mycotic infiltration of the skin, with tumour formation in many areas. *X*-ray treatment had been in use from March, 1933, and had hitherto controlled the disease. But now, and for the first time, the eruptive process became so active and involved areas so considerable that *x*-ray treatment could no longer be employed with safety because the amount required to control the disease must have proved injurious or even fatal to the patient. A point had been reached when seemingly nothing further could be done. In 1933 I had published the beneficial effect of an attack of erysipelas on two cases of mycosis fungoides (MacCormac, 1933). Here seemed a therapeutic hint: the problem, then, was to produce a genuine infection which was accompanied by high fever, of a kind which could be brought under control at will. Malaria therapy seemed to satisfy all these conditions, and I therefore decided to ask the patient to consent to this treatment, explaining to him that it had never been in use for this purpose before, but that I had reason to believe it might succeed. As he had by now come to realize the formidable nature of his complaint and the limitations of our resources, he agreed to the experiment. Nevertheless, it was not without some hesitation that I arranged for an inoculation with malarial blood on April 4, 1934. This inoculation was successful, the reaction reaching a peak of 105° F. on April 15 and 16, and finally being checked after some eight days by quinine treatment. The effect on the eruption was remarkable. As the fever reached its maximum both the tumours and the pre-mycotic areas melted away, leaving a skin almost normal in appearance. Seemingly the experiment had been a success. It soon, however, became evident that the improvement was not to be completely maintained, for in a lesser but nevertheless definite degree the tumours and pre-mycotic areas gradually returned. Here, nevertheless, was at least enough to warrant a second inoculation, which took effect on July 12, the artificially produced malaria being permitted to follow a course of some twelve days, accompanied by high fever and rigors. A repetition of the previous course of events was noted—i.e., a clearing up of the eruption and then some recrudescence. Nevertheless, by these two treatments the degree and extent of the disease had been so much reduced that it was now possible to resume *x*-ray therapy, and by it to arrest and check the now relatively small amount of eruption. It is interesting to record that in November, 1934, an intravenous injection of pyrifer was made, producing a temperature of 101.4° F. The result was disastrous: considerable new erythematous patches developed, and the original mycotic lesions were all aggravated, some days elapsing before the skin readjusted itself to its previous state. This experiment suggests, if no more, that it was not the fever as such but the underlying disease process, of which the fever was a symptom or reaction, that brought about the improvement; which may remind us of the distinction between artificial protein shock and the very complex reactions of a natural morbid process such as erysipelas or malaria.

Third Admission : April 8, 1936, to August 5, 1936

The period following the second discharge from the skin wards in December, 1934, up to November, 1935, can be described as one of comparatively good health. Then a deterioration set in. Severe backache was experienced, with vomiting and progressive anaemia. The spleen was considerably enlarged and there were palpable glands in the right axilla. All these symptoms could seemingly be accounted for by earlier conditions—the splenic enlargement being attributed to what was supposed to be the recurrent malaria, the enlarged glands to a neighbouring patch of affected skin, and the anaemia to the prolonged radiotherapy. On admission to a medical ward on April 8, 1936, the patient was pale and looked very ill. He complained of epigastric discomfort, occasional vomiting—not related to food—backache, and loss of weight. Of the previous extensive eruption there now remained only a dry patch over the right scapula and two small patches on the legs. The liver, spleen, and a group of glands in the right axilla were all enlarged. For some fifteen weeks there was present an irregular pyrexia up to 100° F., with occasional rigors. Blood counts made on several occasions showed an anaemia which persisted in spite of haematinics such as iron and liver. There was no evidence of haemolysis and no reticulocytosis. No malarial parasites were observed. The white cell count disclosed a leucopenia with a normal differential count. The absence of an eosinophilia calls for comment. On discharge from hospital on August 5, 1936, the patient is reported to have said that he felt quite fit, and his weight, which had fallen to 8 st. 7 lb., had then reached 10 st. 4 lb.

Fourth Admission

The fourth and last phase includes a period between readmission on September 22 and the death of the patient on November 19, 1936. The recurrence of the abdominal pain with rigors and pyrexia, the enlarged glands, liver, and spleen, together with other signs and symptoms, if not unquestionable, were at least favourable to the diagnosis of Hodgkin's disease, and this was supported by the microscopical examination of a lymphatic gland removed on October 7, 1936, which showed loss of structure, diffuse fibrosis, endothelial proliferation, and occasional giant cells of the Hodgkin type. Although there were no eosinophils Dr. Scarff reported that the appearances were strongly suggestive of Hodgkin's disease. Throughout the fourth admission the general condition steadily worsened. Ascites developed, there was pronounced anaemia with a leucopenia, the white blood cells dropped to 2,800 per c.mm., and a fall of blood pressure and progressive weakness terminated in death on November 19, 1936.

Necropsy (Bland-Sutton Institute, 231/36)

The following is abstracted from the post-mortem report:

"The right pleural cavity contained one pint of clear straw-coloured fluid: there were dense pleural adhesions over the surface of the left lung. The heart weighed 8 oz., and was wasted, although the muscle was firm. There was an ulcer measuring 1 inch by 1/2 inch in the oesophagus at the level of the bifurcation of the trachea. Deposits of a firm white growth were present in the upper lobe of the left lung, in the spleen, and in the liver. Those in the lung and spleen measured up to 1½ inches in diameter, whereas those in the liver were larger, some having a diameter of 2 inches, umbilication occurring in the superficial tumours which projected above the surface of the liver: the spleen and liver were both enlarged, the former weighing 27 oz., the latter 116 oz. There were three pints of clear fluid in the peritoneal cavity. A section of the femur showed the upper three-quarters of the shaft filled with red marrow. Histological examination of the white masses showed proliferation of cells with large clear nuclei resembling reticulo-endothelial cells. There were also numerous giant cells exhibiting two or three darkly stained nuclei. Although only a few eosinophils were present, the appearances were those of acute Hodgkin's disease rather than a reticulum-celled lymphosarcoma."

Commentary

The illness and death of this patient, as recorded above, have served to throw some light, if in no more than a relative and small way, on the pathology and therapeutics of an obscure skin disease. Expressed in their simplest terms the facts are these. The patient developed first the characteristic lesions of mycosis fungoides: he was brought before the Dermatological Section of the Royal Society of Medicine on May 17, 1934, and again on December 19, 1935, the diagnosis being accepted by all those present on both occasions (MacCormac, 1934, 1936). As the result of malaria therapy the extensive eruption was finally reduced to three small patches, as noted on the third admission (April 8, 1936), being subsequently and up to the patient's death in November, 1936, negligible or absent. This introduced a new therapeutic principle. Further, the terminal transformation in this case of what was at first mycosis fungoides into what became Hodgkin's disease seems to establish the unity of these two clinical entities, a relation that has often been suggested. If the evidence in this case is considered good enough to establish this relation, then it follows that there is an aetiology and pathology common to both these forms of reticulo-endotheliosis. Nevertheless, as Sir Humphry Rolleston (1924) has pointed out, in the usual run of cases of Hodgkin's disease the changes are confined to the lymphoid structures—namely, the lymphatic glands, spleen, walls of portal vessels—and in the interstitial tissue of the lungs, kidneys, bone marrow, subcutaneous tissue, and serous membranes. Lymphadenomatous nodules in the skin are of extremely rare occurrence. Sir H. Rolleston had been able to collect only twelve cases in 1924: such nodules, I would venture to suggest, are in the nature of metastases. Since mycosis fungoides similarly keeps to its own territory, only rarely invading the deeper tissues or viscera, it would seem that the hypothetical virus has a sort of selective affinity for different parts of the reticulo-endothelial systems. Nevertheless the cure of the skin disease in this case did not prevent the subsequent development of a progressive and fatal form of reticulo-endotheliosis elsewhere. In another field—namely, that of micro-anatomy—there is to be obtained further support for the identity of mycosis fungoides and Hodgkin's disease, and in this connexion Civatte's (1936) authoritative observations in the *Nouvelle Pratique Dermatologique* may be quoted as follows:

"In lymphogranulomatosis and mycosis the infiltrates show a greater variety (as compared with the infiltrates of leukaemia). Polynuclear neutrophils and eosinophils—and the latter sometimes in great abundance—lymphocytes, plasmocytes, and all the other polyblasts, are met with there in proportions which vary according to the case. But there are always a considerable number of large histiocytes with a voluminous nucleus and poor in chromatin, with a homogeneous and faintly basophil cytoplasm: sometimes these cells undertake the office of macrophages; they are thus genuine histiocytes. Here and there one of these cells is provided with a budding nucleus, and recalls a Sternberg cell; it is a transitional form. Sometimes even a true Sternberg cell is met with, identical with those which are seen in abundance in the glands in Hodgkin's disease. The diagnosis of cutaneous lymphogranulomatosis will be made if the clinical type is not clearly that of mycosis. But it must be realized that the most characteristic mycosis will also sometimes show genuine Sternberg cells. The microscope cannot, thus, distinguish between the two affections. Moreover, it is not certain that these are two different diseases: mycosis is perhaps only a special clinical type of lymphogranulomatosis, a pure cutaneous lymphogranulomatosis. It is known, moreover, that in certain cases an 'adenitis' appears in the terminal stages of the evolution of mycosis: the primarily cutaneous lymphogranulomatosis has invaded the glands."

Many authorities are prepared to go much further, creating a single and comprehensive group, the lymphoblastomas, embracing conditions both simple and malignant, such as lymphoid leukaemia, Hodgkin's disease, lymphosarcoma, and mycosis fungoides—the type-cell common to all being, according to M. H. Gordon, A. E. Gow, and Sir H. Rolleston (1937), the lymphoblast. The creation of this group relies upon intermediate and transitional forms which are deemed sufficient to link the whole together. The case recorded above serves only to relate two members of the larger group—namely, Hodgkin's disease and mycosis fungoides. From another source I am able to produce some evidence showing that mycosis fungoides is not malignant or cancerous or sarcomatous. In 1919 the late Dr. Henry Beckton, working in the Cancer Research Laboratories in the Middlesex Hospital, demonstrated that when tissue is fixed in weak formol Müller solution, stained with aniline acid fuchsin, and differentiated with picric acid alcohol, the Altmann granules which then appear are profuse in the cells of inflammatory exudates and of simple tumours, whereas they are absent or negligible in the cells of malignant growths. This differentiation is usually so well marked as to be apparent even when the slide upon which the section is mounted is held up against the light and examined with the naked eye, the redness or absence of redness due to the presence or absence of the acid-fast granules being then discernible in many cases. In 1913 the late Dr. J. J. Pringle brought a patient with mycosis fungoides before the Dermatological Section of the Royal Society of Medicine. In this case I had found giant cells (Sternberg cells) and had provided Dr. Beckton with tissue, which he prepared as described above and in which the Altmann granules were demonstrable in the cellular infiltrate in abundance. This, so far as it goes, favours the non-malignant nature of mycosis fungoides and, by inference, of Hodgkin's disease also.

In putting together the above record I have drawn upon the reports and clinical notes of my colleagues in the medical department and the Bland-Sutton Institute of Pathology, who have generously permitted me to make use of them. I am under an especial debt to Dr. Arthur Willcox, who when medical registrar had collected much of the material upon which this paper is based, and with whom, had circumstances permitted, I had hoped to collaborate.

References

Beckton, H. (1909). *Arch. Middlesex Hosp.* (Eighth Cancer Report), **15**, 182.
Civatte, A. (1936). Darier *et al.*: *Nouvelle Pratique Dermatologique*, **1**, 265. Masson, Paris.
Gordon, M. H., Gow, A. E., and Rolleston, H. (1937). In *Brit. Encycl. Med. Prac.*, **6**, 525.
MacCormac, H. (1933). *Brit. J. Derm. Syph.*, **45**, 237.
—— (1934). Ibid., **46**, 429.
—— (1936). Ibid., **48**, 201.
Pringle, J. J. (1913). Ibid., **25**, 262.
Rolleston, H. (1924). Ibid., **36**, 407.

THE T.N.T. HEALTH HAZARD

BY

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When toluol, or toluene, is completely nitrated with a mixed acid containing sulphuric and nitric acids, trinitrotoluene (T.N.T.) is produced. This is a pale yellow solid with a melting-point at about 80° C. Nitration is completed at about 100° C., the T.N.T. then separating out from the acid as a dark yellow oily liquid. The molten T.N.T. is washed with hot water until free of acid and is further washed with a solution of sulphite of soda to remove impurities. The purified T.N.T. is dried at 100° to 110° C. by running it through a steam-jacketed pan. The finished product can be obtained:

1. As flake, by cooling a film of molten T.N.T. on a revolving drum. A knife of brass which presses against the front of the drum removes the film as small flakes.

2. As crystalline powder, by cooling the molten T.N.T. in a pan, with slow continuous stirring. Lumps are removed by sieving.

3. As slab or biscuit, by allowing the molten T.N.T. to solidify in shallow pans.

4. As crushed flake, by passing flake between rollers and sieving to remove the larger particles.

Flake and crushed flake can be pressed into slabs. Crystalline powder and crushed flake are used in explosive mixtures —e.g., baratol, amatol, ammonal, and military ammonal with charcoal. Thus T.N.T. workers may be exposed to: (1) inhalation of fume from the molten variety; (2) inhalation of T.N.T. dust into the nose, mouth, and throat, with subsequent ingestion; and (3) skin absorption from contact with any of the above forms. Two of the above may coexist, for the vapour from molten T.N.T. will deposit as a crystalline dust on any surface colder than 70° C. Thus a worker thought to have fume contact only may, in addition, be exposed to ingestion. The effect of entry of T.N.T. into the system, the signs denoting entry, and the symptoms which may exist without signs, together with all measures necessary to prevent absorption, should be known to those responsible for the health of workers. The carrying out of such measures, including selection of those employed, should, under management, be controlled by a medical man or woman. Neither the State-registered nurse nor the experienced supervisor is sufficient to maintain adequate check on the hazard, although each is of great help if co-operating. Medical practitioners who lack industrial experience or who are unfamiliar with T.N.T. medical literature can be completely surprised, as is shown by the fact that recently several cases of T.N.T. toxic jaundice have not been recognized as such until within a day or two of death. Informative references recommended are:

1. "The Origin, Symptoms, Pathology, Treatment and Prophylaxis of Toxic Jaundice observed in Munition Workers"; a discussion by certain Sections of the Royal Society of Medicine (January, 1917).

2. "Researches into the Toxic Properties of Trinitrotoluene," by Benjamin Moore, D.Sc., F.R.S. (On behalf of the Medical Research Committee; 1916).

3. "Trinitrotoluene Poisoning." Officially communicated by the Ministry of Munitions. (*Lancet*, 1916, **2**, 1026.)

Prof. Moore's report is an account of an investigation into the properties and chemical reactions of T.N.T. during which conclusive experiments to determine the modes of entrance of the compound into the body were made. He describes the characteristic facies met with in many T.N.T. workers, and concludes with a description of Webster's test for the presence of T.N.T. in the urine. This report, although published in 1917, can be accepted as being up to date.

The *Lancet* article embodies the Moore report, and is presented under the following headings: (1) digestive troubles, (2) blood changes, (3) channels of absorption, (4) differential diagnosis, (5) post-mortem appearances, (6) predisposition, (7) preventive measures and treatment. In an addendum Webster's test is described, with advice as to how the result should be interpreted. This article, in referring to cases of T.N.T. toxic jaundice in munition workers, states that 67% were caused by amatol and only 6% by ammonal, notwithstanding that ammonal contained the larger proportion of T.N.T. It suggests that the greater amount of ammonium nitrate in amatol was responsible, on account of its hygroscopic nature, for facilitating the passage of T.N.T. through the skin. Whatever justification existed in 1916 for regarding the compounds mentioned as standard in respect of their T.N.T. content, it would not apply to-day, for both amatol and ammonal vary considerably in the proportion of T.N.T. present. That wetness of hands caused by ammonium nitrate aids the entry of T.N.T. through the skin is debatable. T.N.T. is quite insoluble in ammonium nitrate, and absorption from solution would not arise. Some skins of fine texture may suffer breakdown of the epithelium from ammonium nitrate, which acts not unlike brine, and so the way be paved for absorption: but it should be kept in mind that the percentage of T.N.T. present is the factor which is the hazard and that the greater the contact with T.N.T. the greater is the health risk.

Schedule for Control of the Hazard

1. Selection of workers.
2. Record of physical condition on entry.
3. Record of sick absences.
4. Periodic examination for signs of T.N.T. absorption.
5. Record of T.N.T. stains in grades—for example, slight, gross, extensive—and also sites, such as hands, feet, underclothing (shirts and stockings), overalls.
6. Co-operation with the works chemist in carrying out Webster's test; this to be done always by the same person if possible.
7. An arrangement that foremen, chargemen, supervisors, or other responsible persons draw attention to workers looking off colour and to any complaining of fatigue or breathlessness.
8. Insistence on provision of protective clothing and control of dust by adequate ventilation; also insistence on washing the hands before all meals, and both hands and face before going home.
9. A reserve of alternative work for those that have to be "stood off."

Selection of Workers

Selection is justified, for a definite health hazard exists, and under present conditions there should be no difficulty in placing rejected candidates elsewhere. Further, those susceptible to T.N.T. may not be protected by even the most satisfactory working conditions and meticulous supervision, and it is well to know the type from which they may spring. Cardinal points for guidance are age, average good medical history, fair but not necessarily high standard of physical fitness, and evidence of attention or inattention to personal hygiene. These factors possess a varying standard, according to whether the process is the manufacture of T.N.T. or the subsequent handling of the product as in shell and grenade filling. Not infrequently fewer health casualties are met with during the manufacture in bulk of a toxic substance than occur in workers using it as a component of other manufacture or in assembly. On manufacturing plant only men are employed in this country; their numbers are out of all proportion to the thousands of young women newly engaged in shell, bomb,

or grenade filling, and it is concerning these that recommendations as to selection apply.

Age is important, and 19 years should be the minimum for T.N.T. contact. Below this the incidence of susceptibility is high. In the war of 1914-18 persons aged 14, 15, and 16 years died from T.N.T. toxic jaundice after five or six weeks' work. Age in the upward direction is not significant, for middle-aged and elderly workers have been employed for many years in T.N.T. processes without suffering in health. In making selection avoid persons who show sweaty palms, for the orifices of the sweat glands will be open during work, thereby promoting skin absorption. Persons who sleep in underclothing worn at work add by this habit to the health risk. Anyone with a history of jaundice should be rejected. A yellow tinge in the sclerotic, often seen in those suffering from constipation, should call for rejection, because the colour alone will cause confusion at the periodic medical examination, while should constipation exist it will probably be habitual, which is a further objection. Long tapering finger-nails should be discouraged by supervisors, particularly when the finger-tip is not suited for this fashion, as explosive may lodge under the nail and be subsequently ingested. Nail-biting is for the same reason very objectionable, and evidence of this habit should be looked for, as it is resorted to whenever the hands are idle.

For women of 19 years body weight in indoor clothes of 120 lb. and upwards should be aimed at, and no female under 105 lb. should be exposed to T.N.T. contact. Such light-weight young women may be quite fit for effort, but, whatever the reason, experience has shown that it is in this class that T.N.T. sickness is apt to occur.

Recording Physical Condition.—Among other items age, height, weight, and history of anaemia or jaundice should not be missed. The weight will be of value later when dealing with cases under observation. Recent experience of many thousands of examinations is that in some areas a high percentage of women in the 20-30 year age group are 14 lb. underweight. A further point is that doctors are not furnished with physical details concerning persons allocated to them under the National Health Insurance Act, and when consulted by a new patient would not know if loss of weight had taken place.

Sick Absences.—For five months following entry into employment these should be recorded as a T.N.T. group and kept in a suspense file. At the termination of this probationary period all workers still fit can be regarded as normal in respect of exposure to T.N.T., but during the period absences certified as anaemia, gastritis, general debility, etc., should be the subject of investigation by the works medical officer, for often such certificates refer to a condition of malaise not definitely diagnosed. A Webster test at this stage is very useful, whether the result is negative or otherwise.

Periodic Inspection for Signs of T.N.T. Absorption

In the case of workers with less than four months' service inspection should be done weekly. After this period the frequency can be reduced, provided co-operation has been established between the medical officer and responsible persons on the job and with the welfare supervisor and factory nurse. A further essential to less frequent examination is that the medical officer should regularly scrutinize the entries recording attendance of workers at the ambulance room on account of indisposition or for such minor injuries as might facilitate the passage of T.N.T. through the skin. At the inspection the worker's hands should be examined and the T.N.T. facies looked for. On the hands brown tarry-looking stains may be found on the palms and the palmar aspect of the fingers. These emit an odour which can be detected if sought for, and impart a bitter taste to the tongue. Staining may be found on the soles of the feet if T.N.T. dust is spilt on the floors. Undue staining should be recorded, for the stain is a reservoir from which T.N.T. may continue to enter the system after the worker has been "taken off." Gross staining may point to carelessness, to failure to use protective clothing, and, if on the scalp, to absence of head-covering. There is evidence that T.N.T. may be slightly soluble in fats and oils, for a greaser on a T.N.T. plant will incur large intense stains more readily than other workers. The significance of staining depends on its extent. Most workers will show it in some degree, and in the absence of symptoms or of a marked facies (referred to later) no particular notice need be taken.

The T.N.T. Facies

This is characteristic, and consists of pallor comparable to that of shock, with coloration at the lips, lobes of the ears, and curl of the helix. This appearance has been referred to as cyanosis, and the lips have been described as "ashen grey." These terms, more or less correct, fail to convey an exact picture, for the hue is brighter than cyanosis—it is lilac in shade. On the lower lip it is so unreal as to convey the impression that a mistake has been made in the lipstick used. The sites mentioned are selective: the coloration is never seen on fingers or toes. After some experience the T.N.T. facies is easily recognized. Two important points should be mentioned: it is greatly modified by excitement or recent exercise on the part of the worker—for example, hurrying to be in time for the inspection—and surprisingly so by artificial light. Under illumination through mellow-tinted globes it disappears, but becomes obvious when the worker steps into the daylight.

The T.N.T. facies has been ascribed to oxygen starvation resulting from conversion to methaemoglobin (or nitric-oxide-haemoglobin) of the oxyhaemoglobin of the red cell by T.N.T., and to a vasomotor phenomenon unrelated to any blood changes. Regarding the former, it is known that the facies may be present while the person concerned remains symptomless as regards lack of oxygen. He or she may carry on normally, unaware of alteration in well-being and showing no sign of fatigue or breathlessness. Further, the facies will exist when the red cell count and haemoglobin percentage are normal for the particular person. Oxygen has been liberally administered by me, without appreciable change, to persons showing the T.N.T. facies. It is a fact that when a worker with this facies is removed to another job he loses the colouring—a change credited to reoxygenation, but which may not be the correct explanation.

Vasomotor Theory

In connexion with the tinting of the ear lobes it is interesting to recall that it was in the rabbit's ear that Claude Bernard first demonstrated the action of the vaso-constrictor fibres, and it is now known that capillaries as well as arteries are influenced by vasoconstrictor stimulation. Stimulation of the vasoconstrictor centre in the brain would, by bringing about stasis in localized areas, induce there an increased venosity of the blood. This explains why the facies can be obvious while the person concerned remains symptomless.

As illustrative of the application of the vasomotor theory to the T.N.T. facies, I refer to an appeal in the *British Medical Journal* of November 15, 1930 (p. 848) from the medical officer of a public school for diagnosis in the case of a boy who, after receiving dental treatment which left a fibre stopping in an incisor tooth, drew, while in the school laboratory, a few drops of aniline dye into his mouth from a pipette. He very soon

collapsed and developed on the face, neck, and hands a "deep blue-black colour." The replies diagnosed the occurrence as a case of aniline poisoning with formation of methaemoglobinaemia. Commenting on the case, I drew attention (*Journal*, 1930, **2**, 980) to the fact that there was not enough benzene chemical (nitro or amido) in a few drops of dye to cause methaemoglobinaemia, and suggested that the dye soaked into the fibre stopping and dissolved in the lipoids in the incisive nerve and thus reached the brain. The blueness and the distribution could not have been a blood change, but could arise from action of the sympathetic or central nervous system, or of both.

The works medical officer would do well to keep both theories in mind. In the symptomless cases the vasomotor view explains the shock-like pallor of the cheeks, the tinted ear lobes, and coloured lips, but some types of T.N.T. poisoning may develop blood changes, and a symptomless case may through continued exposure become one of a different and serious type.

T.N.T. Absorption *v.* T.N.T. Poisoning

Not every case showing the T.N.T. facies, even when associated with a positive Webster test, should be regarded as T.N.T. poisoning or be notified as such, otherwise many unnecessary notifications will be made and the position as regards the T.N.T. health hazard confused. The dividing line between absorption and poisoning will, of course, be drawn according to the experience of the medical officer and the opportunities he has for clinical investigation—for example, Webster test, etc. The correct practice in cases in which the facies is pronounced and Webster's test is positive is to suspend such workers from T.N.T. contact (not from work) for a week or ten days. If the same worker requires suspension several times he is tested for susceptibility (see Webster's test), and the intensity of a positive result in relation to the amount of exposure he has been subjected to after a previous negative result determines whether or not he is classified "susceptible" and removed permanently from contact with T.N.T.

Symptoms which may accompany the characteristic facies and still retain the case in the category of absorption are: onset of breathlessness, constriction felt beneath the midsternum, and malaise. Symptoms which point to systemic poisoning are: gastric ache felt in the early morning; anorexia which has been preceded by increased appetite; physical and mental lassitude; jaundice, exceedingly slight at onset, often first observed as a tinge in the sclerotic; nausea and headache combined; and substernal constriction plus T.N.T. facies.

In some factories I have come across instances in which this substernal constriction was diagnosed as cardiac in origin and the worker certified to be suffering from heart strain. It is easy to make this mistake if the worker's doctor is unaware that the physical effort involved is most unlikely to cause heart strain, and also if the examination has taken place under bad or artificial lighting conditions. The symptom is more often met with in young women of the slightly anaemic type than in others, and the pain or ache complained of may be oesophageal in origin. When it is accompanied by a definitely positive Webster test the case is akin to that of gastric ache placed in the systemic poisoning category.

Doctors in munitions areas must not conclude from the scheme of medical supervision laid down as being essential that contact with T.N.T. necessarily creates sickness, for such is far from being the case. In a large munitions works in the North the manufacture of T.N.T. has gone on unceasingly for the past sixteen years without a single case of serious illness from T.N.T. contact, and many of the workers have been on the job all this time.

Webster's Test.—A description of Webster's test and its interpretation cannot (for reasons of space) be given here, but briefly it is a transient colour reaction indicating, when positive, that absorbed T.N.T. has been acted on during metabolism and has been excreted in altered form. The test in no way denotes systemic poisoning. Positive results can be graded from "trace" to "intense," and this standard helps greatly in the check-up on potential sickness and on susceptibles, since the intensity of a positive result can be considered in relation to the known exposure to T.N.T.

It cannot be too strongly urged on practitioners in munitions areas that they should make quick contact with the works medical officer when they are consulted by women who are exposed to T.N.T. and whose symptoms suggest an industrial origin. This attitude is particularly desirable when the altered health occurs within four months of employment.

THE PROBLEM OF OPERATION FOR RETROVERTED UTERUS

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Whether or not to advise operation in cases of backward displacement of the uterus has always been one of the most controversial subjects in gynaecology. The fact that there are so many different methods of correcting the retroverted uterus—some textbooks devote as many as eighty pages to describing different techniques—shows that there is no universally satisfactory method of operative treatment. However, although many writers either recommend or decry the operation, recent statistics of cases well followed up are not numerous. The out-patient departments of most gynaecological hospitals can produce several unfortunate women who have had some operation or other performed for backward displacement and are no better, and, perhaps what is even more important, the general practitioner who has persuaded some patient to have such an operation done, and finds her symptoms still continue, is puzzled as to what to advise for similar sufferers. In fact, he may get a general impression that all such operations are useless. The question remains, Is he justified in this opinion? It is a well-known fact that the grumbler always reappears: the cured and grateful patient often is not seen again.

The successful results of various operations for backward displacement can be divided into two classes: first, those which are an anatomical success, the uterus being in the anteverted position on examination; and, secondly, those which are also cured of their symptoms—subjective success. It has been found that these two do not always go together.

The Literature

As usual, American writers report the largest number of cases. Graves and Smith (1931), examining 3,358 patients, found that after two years the anatomical cures were 75%, symptomatic cures 63.4%, and relieved 28.2%. They used the Olshausen operation, in which the uterine ends of the round ligaments are stitched to the anterior abdominal wall. Hurd (1927) (1,000 cases in five and a half years, done by many different methods) found 88% successes in the whole series, both anatomical and symptomatic, with 12% failures. The purely anatomical successes were 96% for the whole series. He found that the Gilliam operation was the best for curing abdominal pain and backache but was not of very much value for sterility. Abdominal pain was the most frequent symptom remaining after operation. Gardner (1935) (145 cases), using a combined technique

of shortening the utero-sacral ligaments followed by the Baldy-Webster operation, reports 85% complete relief both anatomically and symptomatically. Two patients, however, died of pulmonary embolism, and only 11 became pregnant afterwards. Wollner (1932) (100 cases), using a modified Gilliam operation, reports an "excellent result" in 65%, but he does not say whether they were an anatomical success. He points out that pain in the back is usually not relieved by operation; and, in fact, it should always be explained to the patient that her symptoms may be no better afterwards. He particularly stresses the bad psychological effect of wearing a pessary, but points out that this should always be tried first to see if the symptoms are any better when the uterus is anteverted. Falk (1937) in America and Fletcher Shaw (1931) and Luker (1931) in this country all agree that a pessary should be tried first, at least for a year. Sharman (1932), reporting from Glasgow, says that he uses several methods, including the extraperitoneal Gilliam operation, the Baldy-Webster, and the anterior shortening of round ligaments. He finds that the Gilliam gives an anatomical cure in 93%, with 87% showing a symptomatic cure also. The anterior shortening gave subjective success in 66.7%. He found that after pregnancy the uterus reverted to its old position in 14% of his cases, and 25% of patients operated upon for sterility subsequently became pregnant. Salmond (1935), at the Royal Free Hospital, using the Mayo modification of the Gilliam operation, reports 24 "good results" out of 32 cases seen.

Since this article was completed Charles (1940), in London, reports only 2 failures in the anatomical sense out of a series of 98 cases examined, but quite a number of symptomatic failures. He found that dyspareunia could be cured as a rule, but menorrhagia, backache, and dysmenorrhoea often remained.

Present Series

In this series followed up in Bristol there were altogether 120 patients operated upon for backward displacement of the uterus between the years 1930 and 1937 inclusive. All these were written to and asked to attend for examination if possible; 92 did so, and 6 wrote letters. Practically all the patients were between the ages of 18 and 40 years at the time of operation. Of the 92 who were re-examined 4 were single and 88 married. Nearly all were sent up by their own doctors from both town and country practices because of their symptoms, which were the usual ones associated with the condition—namely, backache, abdominal pain, either left- or right-sided, menstrual disorders usually in the form of menorrhagia, dyspareunia, or vaginal discharge. Every patient had one or several of these symptoms. It was found that lower abdominal pain is an even more common symptom than the time-honoured backache. None of these patients had tried wearing any pessary before operation, nor had any had a baby less than twelve months previously. Neither had any patient been investigated by the orthopaedic department: it was presumed, rightly or wrongly, that the symptoms were caused by the retroversion.

Other patients were sent up by their doctors for sterility, with or without other symptoms; of these, 19 reported. There was a further small group of patients upon whom operation was performed because of repeated abortion, which was thought to be due to the retroverted uterus.

Operation.—The operative technique used in every case was a simple one. A preliminary dilatation and curettage was performed, and the abdomen was then opened by a curved transverse incision just above the symphysis pubis, which would later be covered by the pubic hair. The uterus was identified and the round ligaments were shortened by means of medium linen thread—a running stitch going from side to side the length of each ligament. The two ends of the thread were tied firmly so that the round ligament was plicated. Another stitch was then put through each fold of the plication and tied over the top to ensure firm anchorage. If the ovaries were found to be prolapsed they were suspended by shortening the ovarian ligaments, and any small retention cysts were pricked. All the patients made a good immediate recovery: there were no post-operative deaths and no complications.

Results

In studying the end-results it must be noted that every patient seen had been operated on at least three years previously, some as long as seven years. It was found that the cases could be divided into definite groups. First of all there were those which had a perfect anatomical result, the uterus being well anteverted, ovaries not prolapsed, and all symptoms cured; these formed exactly 50% of all the cases seen.

The second group comprised those patients in whom the anatomical result appeared perfect but in whom certain symptoms still remained or new symptoms had arisen since operation. This group contained 27 patients, or 29.3% of all those seen. The main symptoms were backache, pain in the lower abdomen, and menstrual disorders. Complaint was often made that before operation the pain was on the right side, whilst now it was on the left, or vice versa. Eight patients complained of vaginal discharge, mostly leucorrhoea, 5 of dyspareunia though the ovaries were not obviously palpable, 2 had "bearing-down" pains, and 3 had urinary symptoms. It is obvious that many of these complaints have a psychological aspect, and it is well known that once some women's attention has been drawn to their urogenital organs they always tend to have trouble there; in fact, they are not grateful even if cured. However, taking both these groups as a whole, there was a perfect anatomical result in 79.3% of cases.

There was a third, rather strange, group of patients who came up very happily and reported that they had been perfectly well since the operation and that all their symptoms had gone. One or two even brought bunches of roses as a token of gratitude! However, on examination it was found with regret that the uterus had gone back to its old position and was still retroverted. There were 8 cases in this group, or 8.7% of the whole. Naturally these women were not told what had happened, and they went away very pleased. Here, again, either there must be some psychological factor helping to produce a cure or else the mere fact of the uterus being retroverted does not necessarily cause all the symptoms that are attributed to it. There must be some additional factor for their discomfort, but it is not always clear what this factor is. It is well known that a retroverted uterus may be discovered in an unmarried girl that gives rise to no trouble at all; therefore, why should the mere fact of retroversion necessarily cause all these symptoms in the married woman?

The fourth group consisted of 11 cases which were counted as failures. In 7 of these the uterus had reverted to its old position and the symptoms were still present or were multiplied. In 4 some other condition had arisen (fibroids in 2 and severe bleeding in 2) that necessitated a hysterectomy.

It was interesting to note that altogether 21 patients had normal pregnancies after the operation, and in 17 (90.4%) the uterus was still in a good position after delivery, and there were only two known failures.

Lastly, there were the 19 patients who were operated upon mainly because of their sterility, 11 (57.9%) of whom subsequently became pregnant. As compared with other

results this is a very high proportion, as 50% seems to be the highest figure recorded. Of the three patients treated for repeated abortion two did not have any more abortions.

As stated, six patients wrote and reported their condition. However, as the position of the uterus was not known they are not included.

The Question of Operation

Now, having seen these results, the question arises, What is the general practitioner to do with the patients who come to him with symptoms that are associated with a retroverted uterus? Should he advise operation or not? If possible a pessary should always be tried first, and if it relieves the symptoms the operation will probably be a success. However, some patients refuse to wear one; and sometimes the use of pessaries has a bad mental effect and may upset marriage relations. If the main trouble is backache, particularly if associated with retroversion following on a recent labour, the patient should, if not relieved by a pessary, be examined by an orthopaedic surgeon, as in many cases the trouble is not due to the retroversion at all but to temporary functional muscular insufficiency, or a true traumatic backache caused by injury to the pelvic ligaments or lower lumbar vertebrae at delivery. These factors are often overlooked. However, if the patient wishes it, the operation for replacing the uterus may be advised, but it should always be explained that it may not be successful, particularly if she gets no benefit from a pessary.

Why the operation is a failure in so many cases is an interesting speculation. Probably the anatomical failure is due to the fact that the round ligaments are not really strong enough to hold the uterus in position without some additional support, particularly if it is somewhat bulky. The symptomatic failures are no doubt due to the fact that these women believe the retroversion to be the cause of all their troubles, when actually these are due to some other factor, either organic or functional. Clare (1933) suggests that if at operation the uterus is seen to be congested it is very likely the source of the trouble, but if it is of normal colour the malposition is probably of no importance, and the symptomatic results will be poor. He therefore makes all his patients walk about before operation, and has them anaesthetized in a semi-sitting position in order to produce natural living conditions.

However, in cases of sterility or repeated abortion for which no other cause can be found in either the husband or the wife the practitioner is quite justified in pressing operation, as there is a reasonable chance that a successful pregnancy may result.

Summary

In 120 patients operated upon for backward displacement of the uterus between 1930 and 1937 it has been found that only 50% gave a result that was perfect both anatomically and symptomatically.

Practitioners are therefore advised to look for some other cause for the symptoms, either functional or orthopaedic.

A pessary should always be tried before operation is suggested.

In cases of sterility for which no other cause can be found, operation gives a reasonable chance of success.

I am grateful to Prof. Drew-Smythe for allowing me to publish these figures.

References

Charles, A. H. (1940). *J. Obstet. Gynaec. Brit. Emp.*, **47**, 445.
Clare, T. C. (1933). *Lancet*, **2**, 178.
Falk, H. C. (1937). *Amer. J. Surg.*, **36**, 750.
Gardner, G. H. (1935). *Amer. J. Obstet. Gynec.*, **30**, 596.
Graves, W. P., and Smith, G. V. S. (1931). *Surg. Gynec. Obstet.*, **52**, 1028.
Hurd, R. A. (1927). *Amer. J. Obstet. Gynec.*, **13**, 742.
Luker, S. G. (1931). *British Medical Journal*, **2**, 1171.
Salmond, M. (1935). *J. Obstet. Gynaec. Brit. Emp.*, **42**, 623.
Sharman, A. (1932). *Glasg. med. J.*, **117**, 69.
Shaw, W. F. (1931). *Practitioner*, **126**, 585.
Wollner, A. (1932). *Surg. Gynec. Obstet.*, **55**, 659.

A SIMPLE OPERATION FOR REDUCTION OF FRACTURES OF THE OS CALCIS

BY

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Fracture through the waist of the os calcis is still the "unsolved fracture," and brave is the man who claims any great measure of success in its treatment. Surgical literature abounds with papers dealing with results and methods of treatment, but, as McFarland pointed out, the disability resulting from this fracture, as revealed by statistics from various insurance companies, shows that skill and experience seem in no way to guarantee a better result than can be attained by unspecialized treatment.

The numerous methods employed in its treatment serve to confirm the statement that this fracture is still "unsolved." During my relatively short career as a practitioner of the surgical art I have turned from one mode of treatment to the other in dealing with these fractures. At one time fixation in plaster-of-Paris was used, without any attempt at reduction; then came the dreadful procedure of "pulverizing" the fractured bone and moulding it somehow into shape; then active skeletal traction was employed to pull down the elevated posterior fragment; then Böhler showed that lateral compression would reduce another factor in the displacement. All our results seemed poor, and American surgeons advocated immediate fusion of the subastragaloid joint, essentially on the grounds that conservative treatment is merely a waste of time, as almost all cases develop subastragaloid arthritis and will require fusion anyhow. But even after obliterating the various adjacent joints we became all too familiar with the patient with the shuffling gait and the painful foot who haunted our massage and out-patient departments, and made the hours we spent there a misery, and for whom nothing could be done.

In spite of these setbacks we cannot admit defeat. These fractures are becoming more and more common as the speed and height at which we live increase, and we must accept the challenge to find some certain cure for them, just as we have done for so many others which were formerly associated with such poor results. We have mastered the treatment of the Colles and many other articular fractures, and there is no reason why good results should not be obtained in fractures of the os calcis.

The results which have been attained in Colles's and other para-articular fractures have shown that the secret of success lies in anatomical reduction. But this reduction must be carried out early. We have learnt to regard the Colles fracture as a surgical emergency, as urgent as, or more urgent than, an acute appendix; for we have found that joint stiffness and its complications, pain and atrophic bone changes, can be avoided by early anatomical reduction. Our attitude to fractures of the os calcis is entirely different. If admitted to hospital late in the day they are lucky if they are even radiographed, and if reduced within a short period of the accident the patients must consider themselves extremely fortunate. I do not discount the zeal or efficiency of those treating them. We have been brought up to look on these fractures as pretty hopeless, and have, too, been habituated to "delayed" methods of reduction (skeletal traction, for instance, taking days to reduce the deformity), and so do not realize that "such fractures are dangerous."

At the present time many fractures of the os calcis must be treated without proper equipment, and for this reason, too, a simple operation will be described which successfully reduced a fracture we had failed to reduce by skeletal traction. The equipment needed is minimal, and the ease and the simplicity make it suitable for use by persons with no special surgical skill.

Case Report

An aircraftman in the Fleet Air Arm, aged 22, fell twenty-five feet on November 21, 1940, and landed heavily on his left foot. On admission to a hospital ship he was found to be suffering from compression fracture of the left os calcis, with severe comminution and gross upward displacement of the posterior fragment.

First Operation.—On November 22, under pentothal and spinal anaesthesia (Dr. R. F. Woolmer), a Steinmann pin was inserted through the soft tissues above the posterior fragment, behind the ankle. By means of this, screw traction was carried out with a Watson-Jones lower-leg-fracture traction apparatus. While full traction was maintained, lateral compression of the fracture was effected by means of the handles of a pair of Stille's plaster shears, used like a nut-cracker. When reduction was thought to have been effected the limb was plastered and the Steinmann pin removed.

Radiographs, however, showed that reduction had not been attained. The fracture was so grossly displaced that it could not be left as it was. We had two alternatives: continuous skeletal traction by means of a Kirschner wire through the posterior fragment, or immediate fusion of the subastragaloid joint. A Kirschner wire seemed unlikely to succeed any more than a Steinmann pin, and arthrodesis was dangerous on account of the fear of sepsis with the unhealed wounds present from the Steinmann pin. The simple procedure described below was therefore carried out.

Second Operation.—On November 28, under pentothal and spinal anaesthesia (Dr. R. F. Woolmer), a small incision was made over the posterior surface of the os calcis, and into this a strong Steinmann pin was inserted forwards through the body of the posterior fragment until the point was judged to be at the fracture through the waist of the bone. The handle of the pin was then rotated in a plantar direction, the effect being to

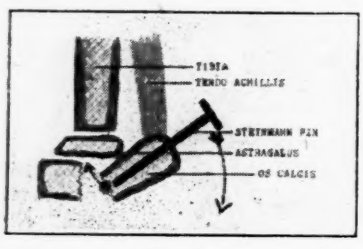

FIG. 1.

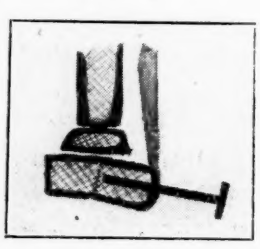

FIG. 2.

FIGS. 1 AND 2.—Diagrams showing reduction of fractured os calcis by means of a Steinmann pin. These are exaggerated to show the torque effect produced by depressing the handle of the Steinmann pin.

lever down the posterior part of the fractured bone and at the same time to elevate the anterior part. The patient was then taken to the *x*-ray department, with the pin still *in situ*, and the movement carried out under the screen, when it could be clearly seen that depression of the handle produced a "torque" effect on the fracture, the posterior part being depressed and the anterior part being elevated into its proper relation with the astragalus. Very little force was needed to bring this about, and full correction was easily obtained. A plaster cast was then applied around the fracture, which included the pin, the foot being in plantar flexion. We intended to leave the pin in position, fearing redisplacement, but when the cast had hardened it was found that there was no strain on the pin, which was accordingly removed.

Radiographs taken two days later showed no displacement of the fragments, and the patient was allowed to return to his ship.

Discussion

It is obviously impossible to discuss the method on one successful case, especially as I was unable to follow up the patient; but the simplicity of the procedure and the few instruments needed for its performance—especially at this time when many fractures must be treated in hastily equipped hospitals—justify publication.

The reduction clearly showed that descent of the anterior part of the posterior fragment is a factor in the displacement that has not been sufficiently recognized. It is difficult to see how simple traction on the posterior part of the fracture can be as successful in reducing this displacement as the torque force applied by a pin passing through the fragment.

By this method immediate and full reduction can be obtained safely, and no special skill or knowledge is required to carry out the operation. A carpenter's chest supplies accessible instruments which could easily be substituted for the Steinmann pin and the Stille shears. It is true that a simple closed fracture is rendered compound by the method, but our experience in all varieties of fractures shows that little is to be feared from this unless some foreign body, such as a plate, is left at the site of fracture.

Summary

A simple operation for reduction of fractures of the os calcis has been described which requires the minimum of equipment and of surgical skill.

Attention has been drawn to the downward displacement of the anterior part of the posterior fragment and to the ease with which it can be elevated into position.

The operation seems so obvious that I fear it may have been previously described. I can find no record of it, but if there has been I would offer my apologies.

Medical Memoranda

Traumatic Rupture of the Pectoralis Major

Although traumatic rupture of a muscle or tendon is by no means uncommon, the following case is thought to be worthy of record as I have been unable to find any previous description of the pectoralis major being so affected.

Case Report

The patient, a miner aged 47, of excellent physique, sustained a severe blow on his right shoulder whilst working in the pit on February 6, 1941. He was knocking out some pit props when a large piece of stone, weighing approximately 25 cwt., struck his right upper arm a glancing blow; at the moment of impact the arm was in the position of abduction and external rotation. He immediately experienced severe pain in the right shoulder and right upper arm, and was subsequently unable to move the arm. After a few hours considerable swelling of the shoulder was noticed; this was followed by bruising, which soon became severe, over the anterior aspect of the shoulder-joint, the anterior axillary fold, and the upper half of the right arm. The patient attended the casualty department the same day, but a radiograph of the shoulder-joint and upper arm revealed no bony injury. He was not seen again until March 4, when he attended the surgical out-patient department complaining of a painful and weak right shoulder. He stated that he had been unable to move his right arm for six days after the accident and that he was gradually getting back the use of the arm, but that it still felt weak. He had recently noticed that his shoulder muscles "had gone to nothing."

On examination the left shoulder and arm were normal, the muscles being well developed. The right shoulder region presented a most striking picture. There was pronounced "hollowing" over the anterior aspect of the chest wall on the right side, the anterior axillary fold was absent, and the upper ribs were

unduly prominent. On attempted active contraction of the affected pectoralis major it was at once obvious that the whole of the sterno-costal part of the muscle had been ruptured at its musculo-tendinous junction, some 2 inches from its insertion into the lateral lip of the intertubercular sulcus of the humerus. The divided ends were easily palpable; they were widely separated, the main mass of the muscle being bound down to the inner aspect of the chest wall in the region of the sternum. The tendinous insertion could be felt to be comparatively freely movable, but the muscle itself had become firmly adherent in a contracted position and could not be moved apart from its surrounding structures. There was a gap of approximately 5 inches between the two ends, as measured with the arm to the side. There was at this time no external evidence of trauma, no swelling, and no bruising, and the patient stated that the pain steadily decreased as he regained the use of the limb. The movements of the shoulder-joint were almost full and were accompanied by relatively little pain. There was some weakness of adduction and internal rotation of the arm as compared with the normal side, but this was not unduly marked.

Discussion

The following points are of interest:

1. The rarity of complete traumatic rupture of the sterno-costal head of the pectoralis major. The muscles and tendons usually ruptured by trauma are the quadriceps extensor cruris, the adductor longus, the tendo Achillis, and the plantaris in the lower extremity, and the supraspinatus and biceps in the upper extremity. The rectus abdominis may also be ruptured, but this is usually in association with the convulsions of tetanus.

2. Despite the fact that the blow was undoubtedly a very severe one the humerus suffered neither a dislocation of its head nor a fracture of its shaft, the pectoralis major alone being torn. The site of the rupture was at the junction of the muscular and tendinous portions, this being the usual place for such a rupture to occur.

3. The mechanism of this particular injury would seem to have been a sudden involuntary contraction of the muscle against a severe wrench which forced the arm to take up a position of extreme external rotation and abduction.

4. That a negative radiograph of the shoulder-joint may lead the unwary into a sense of false security, and the pronounced swelling be put down to simple though severe bruising. Looking back on the case the symptoms were quite characteristic. At the time of the initial injury the patient experienced a sudden sharp pain at the site of rupture of the pectoralis major, though he was not aware of "something having snapped," as is often the case. This was followed by loss of function of the affected part, which in turn was followed by severe swelling, accompanied by ecchymosis. As the swelling subsided the patient noticed a gap between the two retracted ends of the muscle and somewhat naturally assumed that his shoulder muscles were "wasting away."

5. That active movements of the arm were very good and after four weeks were almost painless. The power of the arm was relatively little impaired, adduction and internal rotation being carried out mainly by the teres major, subscapularis, and the latissimus dorsi.

As regards the subsequent treatment it was obvious that at the time the condition was diagnosed no surgical measures could be undertaken with any hope of success. The muscle ends had retracted widely and the sterno-costal portion had become firmly adherent to the inner half of the chest wall, leaving a gap which could not be successfully bridged.

It is usually agreed that primary suture of a torn muscle should be undertaken within the first five or six days of the injury, and that secondary suture, even if the ends can be approximated, usually yields a disappointing result, owing to the undue amount of fibrosis present and to the adhesion of the divided muscle ends to the adjacent structures. It is more than likely that an unsuccessful attempt to suture the muscle in the above case might well have led to considerably more disability than at present exists, and in this connexion it is worth recalling that rarely do patients following on a radical amputation of the breast complain of weakness in the affected arm, though it must be admitted that these patients are not engaged in heavy manual work.

I wish to thank Mr. H. Blacow Yates, honorary surgeon to the Royal Hospital, Sheffield, for allowing me to publish this case.

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Reviews

THE LYMPHATIC SYSTEM

Lymphatics, Lymph, and Lymphoid Tissue: Their Physiological and Clinical Significance. By Cecil Kent Drinker, M.D., D.Sc., and Joseph Mendel Yoffey, M.Sc., M.D., F.R.C.S. (Pp. 406.) Massachusetts: Harvard University Press. 1941.

Whether war advances or retards the progress of science is a problem which many have debated during these last two years without coming to agreement, but there can be little doubt that it accelerates the practical application of new knowledge. The problems raised by war injuries, whether from toxic gases, burns, trauma, or shock, have forced clinical workers to modernize their intellectual and technical equipment and to realize that names like Rous, Menkin, Adrian, and Florey should mean as much to surgeons as Robert Jones, the Mayos, Harvey Cushing, or O'Shaughnessy. At first sight this technical monograph on the lymphatics by Drinker and Yoffey might be regarded as suitable only for the physiologist, the experimental pathologist, or the haematologist. In reality it contains more of value for the thoughtful physician and surgeon than the numerous primers on war medicine and surgery which are considered appropriate for them. It is by no means easy reading, and it would have been better for the general reader if a dogmatic summary had been appended to each chapter.

The book begins with a description of the anatomical and physiological organization of the lymphatic apparatus. In the lower vertebrates the lymphatic vessels and the lymphoid tissue are completely separate, and it is only in the higher mammals that we find an intimate association of lymph nodes and vessels, such that lymph never reaches the blood without passing through at least one lymph node. On the other hand, in all vertebrates there is a close association between lymphoid tissue and the alimentary tract. The function of the lymphatic vessels is obvious. They return to the blood stream the fluid—including protein, particulate matter, and cells—which has filtered through the blood capillaries and is unable to re-enter them. The agencies in this flow, which is greatly increased in inflammation, are the tissue tension and the active and passive movements of the part. The function of the lymphoid tissue is much more obscure. It is true that the nodes act as filters, but they are mechanically less effective against viruses than against larger particles and bacteria. Any barrier action of the lymph nodes is more than offset by the dangerously rapid extension of disease that lymphatic vessels render possible, and the organisms are excluded from the action of antibodies which are of high molecular weight and unable to pass from the blood capillaries into the lymphatic system. "It appears from Menkin's work that in a focus of bacterial inflammation the exclusion of bacteria from the lymphatic vessels is much more to be desired than that they should enter and be transported rapidly to the regional nodes." Hence the superiority of chemotherapy by diffusible drugs such as the sulphonamides. The function and fate of the lymphocyte remain a complete mystery. Although lymphocytes survive for several days *in vitro*, enough cells are passed into the blood stream every day to replace the circulating lymphocytes two or three times over. What happens to them all? Yoffey thinks they go to the bone marrow to be the precursors of the red cells and granular leucocytes, but his arguments are not altogether convincing.

The book ends with a chapter entitled "Practical Considerations," but throughout the volume the clinical reader

is continually coming on information which is directly useful in his work and which frequently upsets old or preconceived ideas.

HEART FAILURE

Heart Failure. By Arthur M. Fishberg, M.D. Second edition, thoroughly revised. (Pp. 829; illustrated. 40s. net.) London: Henry Kimpton. 1940.

A second edition of Fishberg's *Heart Failure* has appeared only three years after the original publication. Some additions have been made in most chapters, resulting in a slight increase in size of the already long book, but on the whole the text is not very much altered. More than is the case with most books for the clinician the subject is treated as a study in abnormal physiology, and recent work on the circulatory variables such as cardiac output, blood volume, and venous pressure is reviewed. The traditional method of describing diseases on an aetiological classification in which a discussion of the symptoms of each type forms a part is largely reversed, each symptom being taken separately and then its possible causes given. This method is natural when the subject is treated from the functional rather than from the anatomical point of view. It is not enough now to speak of heart failure simply, and the precise form, of which there are several, should be recognized. These various forms of heart failure are considered in detail. A good account of peripheral circulatory failure and shock is given. This sometimes results from heart disease, though more often from other causes, of which the common traumatic form is of paramount importance to-day. A section on treatment completes one of the best works yet published on circulatory disease.

DYNAMIC HYGIENE

Effective Living. By C. E. Turner, A.M., Sc.D., Dr.P.H., and Elizabeth McHose, B.S., M.A. (Pp. 432. 10s. net.) London: Henry Kimpton. 1941.

Health is presumably the "end" of hygiene, but, as Aristotle said, there are many kinds of ends—such, for example, as the end in itself, and on the other hand ends subordinate to some higher and greater end. A few decades ago people in Britain were content to regard health as an end in itself. More recently, breathing the social spirit, we looked to efficiency as the aim to which all hygiene moved. To-day, with a world war upon us, our views on the question have become more dynamic. We realize that the ultimate end of hygiene is not efficiency alone but efficiency well used, which gives power to nations. Thus by reason of the man and woman power of our country we are able to encounter face to face—to quote Aristotle again—"the greatest and noblest danger."

The recent work on hygiene by Professor C. E. Turner and Instructress Elizabeth McHose exhibits to American youth this dynamic aspect of health and all that it implies. *Effective Living*, as the book is called, is expounded in relation first to the individual, then to the family, and finally to the community. "Health," it is urged, "means courage and enthusiasm for life. It is well worth working for, and yet it is not the final aim. Honour, integrity, and the defence of home and country may demand the sacrifice of health and life itself." All the subsequent advice offered, whether physiological, mental, or ethical, appears to us to be thoroughly sound. The numerous illustrations are excellent and often charming, the mosquito alone, which figures twice, receiving less than justice on both occasions. We have found no medical errors in the book. Having regard to the purpose in view the whole field is amply covered. The main issue is never lost sight of, and the authors are to be congratulated upon their competent and high-minded presentation of dynamic hygiene

Notes on Books

Under the excellent title of *A Doctor Remembers* Dr. E. A. BARTON publishes, after half a century of practice in the centre of Kensington, some very readable reminiscences of his career and his practice, with reflections upon them and on several medical topics of the times. Designed more for the lay public than for his professional brethren, his chapters give a lifelike picture of a really "sympathetic" general practitioner dealing mainly with the more affluent professional classes—academicians, judges, King's Counsel, and so forth. There are many good stories, and much that is entertaining, as well as incidents which may make laymen more understanding than they sometimes are of the difficulties a doctor has to face. It might be wished that his chapter on "medical etiquette" had made it clear that this much-misused term covers a code of professional conduct devised in the interests of patients, not of their medical attendants; but with this slight grumble one can part with Dr. Barton wishing oneself capable of something half as interesting—nor should there be omitted a word of praise for the restraint without which a doctor's memoirs might be more sensational but would not be so creditable to his discretion. The book is published at 12s. 6d. by Seeley, Service and Co.

The popularity of Miss K. C. CLARK'S book *Positioning in Radiography* is shown by the publication of a second edition two years after the first. Although some new text has been added and some new illustrations substituted for old, the book is substantially the same in form as before. The second edition is thirty pages longer but contains the same number of illustrations. Two new sections have been added, on *x*-ray screen photography and serioscopy, and many other sections have been brought up to date. The title of this work does not nearly do justice to its nature. It is much more than a book on positioning in radiography: it is a remarkably complete account of every aspect of that art, and the second edition fully maintains the high standard set by the first. In this respect the purely radiographic parts are more complete and authoritative than those procedures that are more in the province of the radiologist, but the author wisely disarms criticism by advising her colleagues to seek the instructions of the radiologist-in-charge on such matters as, for example, the technique of cholecystography. The second edition is to be recommended with the same confidence as its predecessor. It is published at 63s. by Heinemann for Ilford Ltd.

Preparations and Appliances

NEW VITAMIN PREPARATIONS

The Glaxo Laboratories, Ltd., have introduced two new preparations. Nicorbin tablets contain 1 mg. aneurin hydrochloride, 10 mg. nicotinic acid, and 25 mg. ascorbic acid—that is to say, vitamins B_1 and C, together with the antipellagra factor of the B complex. The manufacturers say that these water-soluble factors are combined for the treatment of subclinical multiple deficiency states, and not merely as a dietetic supplement. The amounts of B_1 and C are certainly satisfactory for normal individuals who take three tablets a day as recommended, but expert opinion is now in favour of larger amounts for those who have any suggestion of deficiency. This is particularly so for nicotinic acid, for Sydenstricker (*Annals of Internal Medicine*, 1941, **14**, 1499) states that he administers as much as 600 mg. daily in treatment.

The second preparation is of high-potency ostelin capsules. Each capsule contains 100,000 international units of vitamin D (calciferol) in vegetable oil, which gives the greatest likelihood of maximal absorption. The manufacturers point out that success with large doses of vitamin D has been recorded in arthritis, parathyroid tetany, rickets, hay fever, and asthma. It is interesting to note that the fear of toxic manifestations with so large doses no longer worries those who have had experience in giving them. Signs of nausea indicate that the treatment should be stopped, after which all is well.

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ADVANCES IN ELECTRO-ENCEPHALOGRAPHY

The scope of electro-encephalography has broadened steadily through the years, and no one can now deny its value, both as a diagnostic aid and as an instrument for neurophysiological research. Progress has been along three main lines: the standardization of technique and the introduction of systematic criteria of interpretation; the investigation of naturally occurring phenomena in both healthy and abnormal subjects; and the study of the effect upon the brain potentials of drugs and other changes in the external and internal environment. Three papers from America are signposts along these main routes of advance. Pauline Davis[1] of Boston has described her methods of classifying records, both normal and abnormal, on the basis of the amplitude and frequency of the rhythmic waves, and the presence or absence of non-rhythmic fluctuations. She also pays attention to the degree of symmetry of the two hemispheres, and to the degree of response of the normal rhythms to mental and visual stimulation. She points out that most of the attempts to devise some measure of electro-encephalographic tracings which will give in one number the total information contained in the record have been abortive and misleading, because the various features concerned do not fall into the same class of phenomena and are therefore incommensurable. It would clearly be of the greatest value if records taken by any investigator could be described in accepted terms and compared with tracings from any other source, but to make this possible in the present state of the subject would mean much regimentation, which would be highly obnoxious to those who approach the subject from a physiological standpoint.

To reach a compromise between dictated order and individual disorder is one of the most urgent tasks which confront electro-encephalographers, both in this country and elsewhere. It is clear that to make every examination comparable with every other a very large number of records must be taken of each patient, whether their condition is "interesting" or "uninteresting"; at least a dozen separate records would have to be made in standard conditions, each would have to be accurately measured, and some would have to be analysed for harmonic content. There is no centre in this country with sufficient staff or time to work along these lines, and like all other theoretical perfections this will undoubtedly be adulterated according to the mood and taste of the investigator. When communications become easier an international congress of those interested in electro-encephalography would be most desirable, and would undoubtedly bring forth valuable and interesting decisions.

In the very early days of electro-encephalography Adrian commented that the normal records were "disappointingly constant," meaning that the administration of drugs and changes of the surroundings and condition of the subject within the physiological range produced very little detectable change in the records from the head. Fowler[2] of Iowa has studied the effect upon the electro-encephalograms in normal and mental subjects of adrenaline, mecholyl, cocaine, and sodium amytal, measuring also the rheobase, chronaxie, and other electrical properties of the muscles. Very little effect was obtained with adrenaline, mecholyl, or cocaine. What changes there were could be correlated slightly with the subjective impressions of the patient, but no satisfactory relationship was established. Sodium amytal, which caused noticeable psychological changes in all cases, gave rise to the well-known slowing of the cortical rhythms produced by most anaesthetics. Also the normal alpha rhythm—the presence of which indicates physiological rest in the brain—tends to be augmented by sodium amytal. A great many other experiments have been reported on these lines, and in general only the known anaesthetics and changes in hydrogen-ion concentration seem to affect the cortical rhythms at all dramatically. Anoxia within the physiological range is relatively without effect, but when it goes so far as to induce changes of consciousness or behaviour it is associated with the usual non-specific slow rhythms which Walter called delta waves when describing their appearance near cerebral tumours. The appearance of such slow electrical rhythms is still the chief diagnostic abnormality, and, from the frequency with which it occurs in quite different clinical conditions, we must assume that it is a non-specific indicator of cerebral distress, dystrophy, or degeneration.

A communication by Usher and Jasper[3] of Montreal shows how useful electro-encephalographic studies may be in investigating symptoms even in diseases that are not strictly neurological. The involuntary movements in Sydenham's chorea have been generally looked upon merely as part of the syndrome of rheumatic fever, but no one has explained exactly how the rheumatic process is concerned in the aetiology of the condition. Pathological studies of patients with this complaint are rare, for they usually recover; but such evidence as is available shows changes which have also been described in other acute infectious diseases, such as degeneration in the basal ganglia. There is no evidence of a specific local lesion characteristic of patients with chorea. Usher and Jasper's work on twenty-three children with Sydenham's chorea reveals that in all cases with severe symptoms prominent generalized abnormalities occur in the electro-encephalogram. These abnormalities are either a decrease or an absence of the normal alpha rhythms, or the presence of the usual delta waves. Mild cases showed no significant departure from the normal range, and in general the degree of abnormality

[1] *J. Neurophysiol.*, 1941, **4**, 92.

[2] *J. exp. Psychol.*, 1941, **28**, 37.

[3] *Canad. med. Ass. J.*, 1941, **44**, 365.

of the electro-encephalogram correlated well with the severity of the symptoms. Moreover, clinical improvement was associated with corresponding improvement in the electro-encephalogram, and a persistence of electro-encephalographic abnormalities during a remission suggested a bad prognosis, as in all these cases the movements returned later. Investigation of the siblings of patients with chorea showed a high proportion of similar abnormalities even when there was no history of chorea except in the original patient, and Usher and Jasper accordingly suggest that chorea may be considered a symptom of cerebral disorder as definite as epilepsy and, like epilepsy, of varied aetiology. One may go even further and speculate whether the symptoms of chorea occur only in those possessing a genetic tendency to such disorders as are accompanied by involuntary movements associated with abnormal electrical properties of the cerebral neurons. A large proportion of "behaviour problem children" also show electro-encephalographic abnormalities, and it is possible that this abnormality is a sign of an inherited or congenital defect rendering the patient liable to either clinical epilepsy or chorea or disturbances of behaviour, according to the influences which happen to be present during their early life. Such a conjecture should provide food for thought for neurologists, psychiatrists, and those interested in heredity and eugenics.

A NATIONAL WAR FORMULARY

Insistence on economy penetrates everywhere in wartime, even to the prescribing of medicines. Not the pill, as a rule, but the sugar coating has to be sacrificed, and even the pill itself may have to be supplied in smaller numbers and of slightly different composition. Sugar is wanted for other purposes, and therefore confections and lozenges must disappear and syrups be restricted to linctuses and to mixtures for children. Animal and vegetable oils and fats, which are needed for food and other vital purposes, are employed in the preparation of liniments, ointments, and lotions, and these, therefore, must be used sparingly. Preparations containing glycerin must so far as possible be eliminated. The strictest economy must be practised with liquid paraffin. Potassium compounds should be prescribed only where the corresponding sodium ones are not satisfactory. These limitations are imposed because important substances ordinarily used in medicinal preparations are now more urgently needed for other purposes. Even if the drugs themselves are still readily available, their packing and distribution make demands on materials, labour, and transport, fully justified if the drugs are essential to medicine, but not if they can be withheld without serious therapeutic disadvantage. Economy as a principle commands universal agreement. To adjust domestic and professional habits to an economy basis is another matter. Long usage makes it difficult for the doctor to reconcile himself to any modification in prescribing, and, prescriptions being given singly and the ingredients ordered in grains and minims, he is apt to ask himself as he writes each one how a minute economy can possibly be of value, while his overriding consideration—and most rightly—is the good of his patient.

Some time ago the Medical Research Council issued War Memorandum No. 3, prepared by the Therapeutic Requirements Committee, on "Economy in the Use of Drugs in Wartime," and this has now been usefully followed by the *National War Formulary*, the work of a committee appointed by the Minister of Health at the beginning of the present year. The chairman of this committee is Dr. Philip Hamill, who represents the Royal College of Physicians, and its members include representatives of the Ministry of Health, the London County Council, the British Pharmacopoeia Commission, the Therapeutic Requirements Committee, certain pharmaceutical organizations, the voluntary hospitals, and the British Medical Association, the last-named represented by Dr. E. A. Gregg and Mr. Lewis Lilley. Dr. Gregg is chairman and Mr. Lewis Lilley a member of the Insurance Acts Committee of the Association, which, some time before the war and with no thought of war prescribing in mind, produced a formulary for national health insurance purposes, and this has been taken as the working basis by the Ministry of Health Committee. The committee consulted also the pharmacopoeias of the London County Council and of the larger hospitals. The result is a workmanlike compilation which will no doubt be adopted for use in panel practice, and might well be adopted also by hospitals and public bodies in place of their peacetime formularies. To private practitioners, again, it is commended as a *vade mecum* of advice, suggestion, and instruction in wartime practice.

The *National War Formulary*, which is summarized on another page, may be said to represent a return to simplicity. Though it includes new drugs and preparations such as the sulphonamides, vitamins, and antiseptic dyes, it maintains the prominence of some of the older drugs which there may have been a disposition to neglect, not through lack of merit, but because of changes of fashion and of the multitude of new preparations that have appeared on the market. The use in wartime of many familiar compounds is discouraged, yet the range is believed to be sufficient to meet ordinary therapeutic requirements. The most valuable and frequently prescribed preparations have been retained, perhaps with some modification, non-essentials have been eliminated, and alternatives have been furnished where this is practicable and where economy would be effected. The list of mixtures alone runs to close on sixty; of tablets to over forty; of ointments to over twenty; of lotions to fifteen; of emulsions to nine. Of eardrops, nasal douches, mouth washes, eye lotions, gargles, enemas, liniments, sprays and vapours, pastes, paints, and powders there is enough variety to satisfy the most fastidious. A Children's Section is included in which, among other preparations, further mixtures are given, in some instances the same as in the General Section but in smaller doses.

The *Formulary* is suggestive and advisory. The doctor may still order what he likes, in so far as it is available, and there is no authority for dispensing substitutes for drugs specified by the prescriber, though a

certain discretion may be allowed as to the form in which they are made up. For example, a pharmacist out of stock of certain pills may dispense equivalent tablets, but he must state on the prescription if tablets have been supplied. The good sense of the medical profession can be trusted to accept the *Formulary* as a wartime expedient which may have in certain respects permanent results on prescribing. It brings about no revolution, but it does offer medical men and women an opportunity, with the minimum of inconvenience to themselves or disadvantage to their patients, to fall in with certain reasonable requirements and limitations arising out of the national necessity.

HEALTH IN PARLIAMENT

The debate in the House of Commons on October 21, fully reported in the last issue of the *Journal*, was a welcome sign that our legislators are showing an interest in what should be the most important matter in the life of the nation—namely, the health and well-being of its citizens. The debate centred on two main issues—the hospital services of the country, and special instances of sickness in the population. Dr. Howitt, who opened the debate, expressed his pleasure with the Minister of Health's statement on Government hospital policy, and his sentiment was echoed by other speakers. Captain Elliston, for example, welcomed the Minister's decision to put upon the local authorities the responsibility for securing adequate hospitals. He mentioned that up to the end of June the damage done to hospitals exceeded in value £20,000,000, which lends force to his argument that the survey of hospitals now to be undertaken must be entrusted to persons with "open minds and wide experience, with no axe to grind for any vested interests or established systems." As Sir Frederick Menzies points out in a letter at page 666, the Minister's policy has had a very good press, but many people would seem to have missed a fundamental point in this policy to which we drew attention in a leading article on October 18 and which is discussed more vigorously by Sir Frederick this week. Any discussion, therefore, of the merits or demerits of the voluntary or the municipal hospitals must in future be carried on in the full awareness of the financial control that will be exercised by the major local authorities over voluntary hospitals. It is one thing to rejoice sentimentally over the happy partnership between the two systems which is so confidently foretold by those who, like Pangloss, are sure that the best of all possible worlds is on the doorstep. It is more salutary, perhaps, to recognize that there are sharp cleavages of opinion and conflicting vested interests, and that in the long run he who holds the purse will see that the tune is played to his liking. Mr. Messer, Labour Member for Tottenham South, in a speech which showed his very real interest in the wider aspects of health problems, said that there was in this country neither a voluntary hospital "system" nor a municipal hospital "system." He was severely critical of the voluntary hospitals, saying that each one was a law unto itself and acted quite independently of others, and that the time had come when both types of hospital should be replanned more comprehensively than was outlined in the Minister's speech. He was in favour of dealing with the matter somewhat on the lines of education, in which under the Board of Education there were standardized salaries for teachers throughout the whole of the country. "The truth is," he remarked, "that the voluntary hospitals cannot continue." His condemnation of the voluntary hospitals received support from a medical Member of Parliament, Dr. Edith Summerskill, who began by saying that she intended to devote most of her speech to "condemning the present system root and branch."

The other side of the question was put most cogently by Sir Francis Fremantle and Prof. A. V. Hill, both of whom took into account not only the virtues of the voluntary hospitals but also the fact that in this country we prefer evolution to revolution. Sir Francis put the matter in a nutshell by posing this question: "What are the needs of the nation, and how can we make best use of the facilities and equipment available at the present time?" He pointed out that it was a comparatively new departure for the State to take over the social services and the social care of the people, and applauded this as a proper development. The emphasis is on development. The old tradition, he said, was useless without the modern spirit, but the modern spirit was also useless without the old tradition. He admitted that many voluntary hospitals had outworn their day, and believed that some kind of interference by the State in the management of the voluntary hospitals was necessary. He did well, too, to stress the deficiencies of the municipal system, and asked what was the value of local elections when very often only 30% went to the poll. "What," he asked, "is the real advantage if the management is elected on any qualification except that of their capacity for the work?"

Professor Hill, who spoke as one who was no "upholder of the privileges of the medical profession," raised the level of the debate by concentrating upon certain general principles, and deplored any attempt to rush in and try to build up a system without careful thought and experiment. The important thing in medicine, he remarked, was to experiment, and he advocated that the two "systems" should be allowed to develop side by side so that the good should be found out and the bad discovered and discarded. In this way we would progress as animals have progressed and as our social system has progressed—by evolution. Evolution is essentially compromise—a continuing compromise between the animal and his environment; and the gift for compromise is one of the most salutary qualities this country possesses.

One of the special aspects of disease that was brought to light in the House of Commons was tuberculosis. Dr. Howitt believed that at the beginning of the war a great mistake had been made in evacuating so many cases of tuberculosis from sanatoria to their homes, and stressed the danger to those in contact with the returned cases. Mr. Messer forcibly underlined these observations by pointing out that in the first two years of this war the deaths from tuberculosis had gone up by 2,000. A recent survey in two areas, he said, had shown there

were 21 new cases in the age group 11-20 in the first quarter of 1939, and the figures for the corresponding quarters of 1940 and 1941 were 28 and 35 respectively. In the age group 21-30 the numbers of new cases in the first quarters of 1939, 1940, and 1941 were respectively 34, 42, and 65. If there were not sufficient accommodation, then he suggested that the big mansions and houses of the country should be conscripted to provide the necessary beds. Major Haden Guest drew attention to the article by Drs. Laidlaw and Macfarlane in the *British Medical Journal* of September 27, in which the increase in the number of cases of tuberculosis was attributed to a combination of long hours, overtime, strain, and ill-spent leisure, and suggested that "we are not using our great public health organization at the present time to avoid increase in that kind of disease." The Minister of Health said that the figures given by Mr. Messer were not borne out over the whole field, and that when the figures for the first quarter of this year were available a reduction of 7% would be found as compared with the first quarter of 1940. He said, too, that he proposed to do his best to meet the need for beds, and pointed out that they were up against a problem not only of beds but also of nurses. Among figures given by the Minister perhaps the most important was the new low record of the maternal death rate of 2.61 per thousand for 1940, and this he attributed generally to the wartime maternity hospitals set up in the reception areas, in which nearly 30,000 babies have been born during the war. On the general subject of the health of the nation, the Minister paid a very warm tribute to the work that is being done in liaison with the Ministry and other bodies by the Central Council for Health Education, and drew the attention of the House to a number of pamphlets and leaflets on health matters prepared by the Central Council for distribution to the ordinary man and woman in the street.

On the same day on which the above debate took place Mr. Butler, President of the Board of Education, announced an important step in the development of meals for school children, stating that the Exchequer had approved an increase of 10% in the rate of grant on authorities' expenditure on meals. The Minister said he was placing at the disposal of local education authorities facilities for setting up cooking depots in all large centres of population. Mr. Butler also said that he aimed at increasing the proportion of children receiving milk in the "milk-in-schools" scheme from about 60%, where it now stood, to as near 100% as may be possible. As he pointed out, the efficacy of these measures depends upon the support given to them by local education authorities and teachers. There can be little doubt that if the feeding of the children of the country were put upon a proper nutritional basis much of the hospital accommodation that is at present the subject of debate will in the future become redundant. The introduction of compulsory midday meals for children in State schools, provided the parents contribute to the cost, can neither undermine their feelings of parental responsibility nor make them believe that the State is a kind of foster parent from whom all good things now and in the future must be expected to flow.

EXPERIMENTAL DIABETES

There are two ways of producing diabetes mellitus in animals: by pancreatectomy, which removes the secreting organ; and by injection of extracts of the anterior pituitary gland. It is nearly ten years ago since Evans and his co-workers observed that dogs treated for eight or nine months with injections of pituitary growth hormones developed persistent glycosuria. The experiments of Young, however, placed the matter on a firm experimental basis, and have led to much further work on the subject. The observation that a crude saline extract of beef anterior pituitary injected into dogs can cause permanent diabetes with all the associated clinical features is one to be placed on a par with the classical observations of Minkowski and von Mering. The aetiological implications of this research for human diabetes will be obvious to all, but in the meantime much work is required to identify the mechanism of the phenomenon and in particular the point of attack of the pituitary diabetogenic principle. That some substance from the pituitary actually antagonizes the action of insulin is suggested by the fact that hypophysectomized animals show much heightened sensitivity to insulin. But that the pituitary can secrete a substance that can interfere permanently with the control of sugar metabolism is a highly significant fact, for the implication is that the body carries within it an auto-lethal weapon and must, therefore, in its own defence constantly exert some controlling or neutralizing influence to combat it. In a sense all the internal secretions are at least dangerous weapons, and were it not for some equilibrating interactions between secretory activity and functional requirement the organism would always be in a state bordering on chaos. Hitherto, so far as we know, extracts have been made mainly from beef glands and injected into dogs, rats, and cats. In rats and cats the action is not so readily demonstrated as in dogs, but injection of anterior pituitary extracts combined with partial pancreatectomy, in itself insufficient to produce glycosuria, can also render these species permanently diabetic.

The permanent diabetes brought about in animals by a short treatment with extracts of the anterior pituitary has been named "pituitary diabetes," but this is not to suggest that the diabetes is maintained as a result of continued over-action of the pituitary. Indeed it is certain that this is not the case, for whereas the animal is resistant to insulin during the injections of the extract, it is no longer so after their cessation when the diabetes is established. It would seem, therefore, that permanent damage is somehow done and that this takes the form of atrophy of the pancreatic islets. Dohan, Fish, and Lukens,[1] using as diabetogenic agent a crude saline extract of frozen beef anterior pituitary lobes, have found that the time needed to induce diabetes in their dogs varies according to the doses given and to the nature of the dogs. Thus six dogs injected intraperitoneally with increasing doses became permanently diabetic in fourteen to forty-three days, and two dogs given small and fairly constant doses, in sixty-two to ninety-eight days; two dogs which failed to respond to large doses became permanently diabetic when partial pancreatectomy was followed by injection of a small amount of extract. After the establishment of the permanent diabetic phase, if no insulin were injected, 85% or more of the glucose available from all constituents of the diet could be found in the urine. Some slight evidence was obtained that insulin retarded the progress of the pituitary diabetes in two dogs, and that such dietary changes as fasting or fat feeding also had a similar temporary effect. Histological study of the pancreas of

[1] *Endocrinology*, 1941, **28**, 341.

pituitary diabetic dogs showed that there was considerable atrophy of the islets of Langerhans, and such islets as remained consisted chiefly of the alpha cells. This atrophy is not accompanied by fibrosis: the atrophied islets seem to shrink and are smoothly replaced by acinar cells. There are variations in the severity of the clinical picture corresponding with the intensity of the effects on the pancreas, but if suitable conditions are chosen the full clinical picture is reproducible in all cases.

The extracts used contain other pituitary hormones, and some of their effects are observable in the injected animals. As to the nature of the diabetogenic substance and the actual amount of it injected there is no information. Whether the human pituitary can manufacture this substance is not known. But the glycosuria of the acromegalic may be due to the liberation of a similar substance. There are the observations by Davidoff and Cushing that of 100 cases of acromegaly twenty-five had glycosuria, and of these, twelve were cases of true diabetes. It is well known that if a pituitary tumour associated with acromegaly is removed the attendant diabetes may disappear, so that there was evidently no significant permanent lesion of the pancreas. As the glycosuria in acromegaly may be temporary in the developing stage of the disease or permanent after the disease is fully established, it would seem that it is all a question of the intensity of liberation of a diabetogenic substance in the early stages and the amount of islet tissue originally present in the attacked pancreas.

CONCENTRATED RED CELL SUSPENSIONS

Since the publication in this *Journal* in 1940 by MacQuaide and Mollison[1] of their method of transfusing concentrated red cell suspensions this preparation has become increasingly popular. In our present issue members of the Merseyside Transfusion Service analyse the results obtained in seventy-seven transfusions of concentrated red cells. Blood in the bank is converted into plasma when seven days old. This is done by passing a sterile needle through the cap of the blood bottle and sucking off the supernatant plasma. After removal of the plasma the needle is passed down to the bottom of the remaining red cell layer, and the red cells are then in their turn sucked off into another bottle. A rather sticky layer of white cell debris and platelets is left behind. MacQuaide and Mollison originally suggested the addition of a small amount of 1.1% sodium chloride to the cells in order to reduce their viscosity. Williams and Davie found that in their experience such a solution caused undue haemolysis of the red cells, and since no difficulty was experienced on account of the suggested viscosity they add no diluting fluid to their cell suspensions. They emphasize the importance, however, of regulating the flow to not more than 100 c.cm. an hour in order to avoid the risk of cardiac embarrassment in anaemic patients who might be expected to have a damaged myocardium. Concentrated red cells, they suggest, should be used only for cases of chronic anaemia which require replacement of haemoglobin and red cells with minimal increase of circulating blood volume. They divide their cases into four groups: (1) post-haemorrhagic anaemias; (2) anaemias associated with severe infections; (3) anaemias of pregnancy and the puerperium; (4) dyshaemopoietic anaemias. Irrespective of the nature of the condition transfusion with one bottle of 500 c.cm. of concentrated red cell suspension raises the haemoglobin level between 10% and 12%. Exceptions to this rule occur. Low responses, Williams and Davie suggest, are usually due to a rapid exacerbation in the factors causing anaemia. Unexpectedly high results have in some instances been attributable to operations which not only have removed the cause of the anaemia but may also have produced some degree of haemoconcentration. They point out that there is an unavoidable error in all the haemoglobin readings, since the estimations were made by different observers using different methods. The average figure does, however, agree reasonably well with that of other workers. The reaction rate is considerably higher. The gross reaction rate for the series was 19.5%, Grade III reactions (definite rigors associated with rise of temperature) representing 9.1% of the whole. This suggested that these figures are misleading, as at the time the observations were made Merseyside was subjected to severe bombing, and the usual provisions for pyrogen-free water were not available. Allowing for this disturbance of normal laboratory routine, Williams and Davie agree with MacQuaide and Mollison in believing that reactions with cell suspensions are less than with whole blood. They also describe a group of reactions which they considered allergic in origin: one, which is described in detail, proved fatal. At necropsy petechial haemorrhages were found in the myocardium. The possibility that such a death may have been due to transfusion of infected blood is not considered, and no mention is made of the result of cultures of the patient's or donor's blood. The authors suggest that all donors with a history of allergic manifestations should be excluded from regular panels.

[1] *British Medical Journal*, 1940, **2**, 73.

LONDON VOLUNTARY HOSPITALS COMMITTEE

The Voluntary Hospitals Committee for London, elected in 1938, was an almost forgotten body during the early part of the war, for the main issues confronting the voluntary hospitals came within the scope of the War Emergency Committee of the British Hospitals Association, and there were few problems which did not also affect provincial hospitals and thus needed to be dealt with on a national basis. Later, however, questions have arisen affecting voluntary hospitals of London specifically, and the committee has become more active again. It has now issued a brief report for the eighteen months January, 1940, to July, 1941. It will be remembered that the committee represents three main groups of hospitals, each with an almost equal number of representatives—namely, general hospitals with undergraduate schools, general hospitals without schools, and special hospitals. The hope is expressed that the voluntary hospitals of London will take note of the committee's continued existence; by its constitution it is intended to be representative of the governing bodies and medical staffs, and if it is to achieve success, carry weight, and generally serve a useful purpose it must be sure of the support of its constituent hospitals. One piece of work carried out at its instance is the establishment by the King's Fund of a Contributory Schemes Committee for London, upon which the Voluntary Hospitals Committee itself, the King's Fund, the Hospital Saturday Fund, and the Hospital Saving Association are all represented, to deal with questions arising out of the work of contributory schemes and the relationship of such schemes to the hospitals. The chairman of the Voluntary Hospitals Committee is Mr. O. N. Chadwyck-Healey, the vice-chairman Dr. A. M. H. Gray, and the offices are at 10, Old Jewry, E.C.2.

The Hanbury Medal of the Pharmaceutical Society of Great Britain will be presented to Dr. Harold King of the National Institute for Medical Research, on Thursday, November 13, at 2.30 p.m., at 17, Bloomsbury Square. After the presentation Dr. King will give an address on chemistry and pharmacy, dealing with the mutual repercussions of the two subjects and having as its background the *British Pharmacopoeia* of 1932 and the Addenda.

EFFECTS OF EVACUATION AND OF AIR RAIDS ON CITY CHILDREN

BY

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An attempt is made in this article to assess the effects (*a*) of evacuation and (*b*) of air raids on the children attending the Manchester Child Guidance Clinic. So much has been written about the physical advantage to children of being out of big cities that it seems worth while to try in some way to assess and reduce to terms the psychological effects of war on them. Admittedly the numbers are small and represent a selected set of children in that they have been referred to a clinic of this nature, but in one group of figures these numbers are placed side by side with the total school population so that some comparison may be made. So far as the clinic is concerned the numbers represent all cases under treatment there in July, 1939, plus all those referred since that time up to March, 1941. From these figures only two groups have been excluded, the reason for exclusion being obvious: (1) cases coming from neutral and reception areas; (2) cases of proved mental defect.

TABLE I.—*Relation of Clinic Cases to School Population*

	Clinic Cases	Figures of Total School Population
Total number of cases	131	88,610
Total evacuated since September, 1939	88 (67%)	60,427 (68%)
Returned within 4 months	65 (50%)	65,303 (75%)
Further returned by end of 6 months	18 (15%)	12,065 (14%)
Still evacuated	5 (4%)	
Evacuated after raiding began	20	Further figures not available owing to continuous re-evacuation
Returned within 3 months	3	
Still evacuated	17	

Table I is designed to show the relation of the clinic cases to the general population, and is self-explanatory, except that it should perhaps be stated why the periods of four months and six months have been chosen. The four-months group comprises the children who either failed in evacuation from the beginning or who at any rate were unable to weather the Christmas holiday period. The six-months period is intended to be rather an elastic one covering those children who returned between Christmas and Easter or with their schools at Easter. A considerable number definitely came back for this latter reason, or because they obtained places in secondary schools which themselves had returned. It will be noticed that while the figure for the original evacuation of clinic cases is closely parallel to the percentage of the total school population which evacuated, the children who returned show a considerable discrepancy. It is difficult to explain this or to be sure whether the fact that we were able to pay regular visits to the parents contributed anything towards their stability in this matter.

Table II is an analysis of the reasons for which these children returned and needs more explanation. Under the heading "Parents' Request" are the cases in which the parents wished to take the child home. The reasons for this change of attitude are important. There was first the question of billeting costs. Only two of the parents complained of this, and in one case the complaint was quite unrelated to reality, and occurred in a family the father of which was in a regular and stable job and before any question of active contribution by parents had been raised. The commonest reason was just that the parents wanted the children home. Some of these cases are perhaps worth quoting, since they show that the parents themselves were maladjusted people.

Case 1.—Girl aged 11. I.Q. 96. Youngest of a family by twelve years; unwanted by mother, who felt very guilty about her feelings. Evacuated in September. Brought home in November. The mother reports: "I was afraid something might happen to her. I thought she wasn't happy. They said she was. I think she was afraid of hurting their feelings."

Case 2.—Boy aged 17. I.Q. 122. Referred for stammer. Father committed suicide, and the boy had found him dead. Youngest of the family and the only one living at home with the mother, the others being married. In a secondary school and doing well. Brought home because the mother was lonely.

Case 3.—Boy aged 12. I.Q. 87. Referred for truancy and pilfering. A difficult, very anxious boy whose mother was in a state of chronic ill-health, and who was extremely antagonistic to all his home surroundings; was taken home suddenly by his father because the foster-parents complained that he was difficult to manage.

Under the heading "Child's Request" we have included those cases in which the child requested and was allowed to come home. Nearly all these cases are reported as "home-sickness"; but in a few the child complained of being lonely when alone in a billet or objected to the billet; one disliked having to be in bed by 6 p.m. Two were specifically anxious about the parents at home.

Case 4.—Boy aged 11. I.Q. 156. Ran away from billet. A stammerer. Ambitious over-earnest parents who are afraid he will not get on, as he is too interested in cricket. He took another boy with him, and they started to walk back home, a distance of some fifty miles, and when this proved impossible went to get advice from the police.

Case 5.—Girl aged 13. I.Q. 111. Referred for truancy. Evacuated at outbreak of war. Returned because she was unhappy and lonely. Is an only child, brought up at first by grandmother because mother wanted to continue going to work; feels neglected in her home and anxiously tries to behave in a grown-up way. Over-developed physically, and looks and behaves like 16. Makes fantasies of having brothers in the Services and of having children; she always has twins, so that they will not be lonely.

The third and biggest group is that in which the request came from the billet, and in it are detailed the various symptoms of which complaint was made; the simple heading "Personal Difficulty in the Billet" is self-explanatory. Perhaps the most interesting feature of this group is that in all the cases under the heading "Truancy" the symptom is said not to have occurred before the war started. This is borne out by an investigation which we recently conducted into cases of truancy reported to this clinic. We found, starting from September, 1937, when the clinic was reorganized under the local authority, that between

TABLE II.—*Cases Evacuated in September, 1939; showing Reasons for Return and Apparent Effect of Evacuation*

Reason for Return	Age Group			I. Q.			Apparent Effect of Evacuation			Unchanged by Evacuation
	5–8	8–12	Over 12	B.	N.	S.	Better	Worse	Symptom attributed to Evacuation	
Parents' request	5	8	1	3	6	5	2	5	–	6
Child's request	2	7	14	5	10	8	2	4	6	8
Billet's request:										
Enuresis	1	1	2	–	1	3	–	3	–	1
Pilfering	–	4	1	1	3	1	–	–	3	1
Truancy	–	4	3	3	2	2	–	–	5	–
Unmanageable	–	5	4	1	5	3	1	3	2	3
Illness	1	2	1	1	3	–	–	–	–	4
Personal difficulty in billet	–	3	3	1	4	1	–	1	1	4
Other reasons	2	2	6	1	4	4	1	1	2	4
Total							6 (8%)	17 (24%)	19 (28%)	31 (43%)

September, 1937, and September, 1939, 48%, and between September, 1939, and March, 1941, 52% of the total were referred for truancy, though the clinic was closed for two months and was working short time for another two. Of these truants two entirely ceased when they returned home and one after a short period of treatment. Of the pilferers whose symptom was apparently produced by evacuation, one has since died, one has now adjusted himself, and one has continued to steal. Of the group reported unmanageable, one came from a very disturbed home, where the father and mother were in constant disagreement, and the father violent and gaining his ends by violence. This boy's violence started when evacuated, but continued in his own home and, indeed, in any situation in which he was frustrated; a second was returned after three days as incorrigible: he had twitches and temper tantrums, but reacted well to treatment in a group and is now adjusted at home. He shows no anxiety in raids. The cases of enuresis form another interesting feature. Three out of four of these were worse as the result of evacuation, two of them advancing to faecal incontinence during evacuation. It is perhaps noteworthy that all these three are children of very superior intelligence, and that two of them have been very greatly improved with a short period of treatment. The one case of which we have no record we have been unable to trace since the original inquiry as to which of our patients were evacuated.

The results of this investigation go to show that emotional difficulties were either started or made worse in 52% of the cases examined and that in only 8% was the condition improved. One of this last group had been under treatment at the clinic for two years. She had originally been sent for refusing to go to school, or indeed to leave her mother at all, and we had the greatest difficulty in maintaining contact with her. During the period of treatment she gradually freed herself of her mother, at first consenting to being seen alone, then to making the journey alone, then to taking a clerical course in a commercial school, three of which she tried before finally settling down in one. She finally evacuated with this school and returned because she had completed her course. She was originally referred at the age of 13, and had on test then an I.Q. of 106; she was retested by the same psychologist after two years of treatment and had then an I.Q. of 126. She is now in a good job, which she has held eighteen months. While it is in a sense incorrect to say that evacuation helped this girl, since she was so far improved before it, it is nevertheless true that it helped finally to confirm her confidence and independence, and she proved by week-ends at home her ability to go and come as she wished.

Table III refers to the immediate effect of air raids on children examined. We feel that the word "immediate" should be stressed, since we are not yet in a position to assume that we know what the final effect of living in constant risk of this sort of warfare is going to be on either the adult or the child population. It would perhaps be as well first to dismiss the last group, unfortunately a large one, in which we have no report of the child's reaction to raiding. We have therefore written them off as "no change," with the exception of five who are known to have responded badly to evacuation. The reason for this lack of reports is certainly partly that a number of these children have been re-evacuated, especially since a bad raid at Christmas, 1940, and the parents have probably for this reason failed to answer letters referring to what they doubtless consider a past problem; partly that some of the cases are those discharged from the clinic a long time before, the parents again considering this a raking-up of old difficulties. It was impossible to visit personally so large a number of cases, so that inevitably the work was done by questionary. Finally, there undoubtedly exists in some parents' minds the fear that to admit that the child is anxious may lead to his compulsory evacuation.

In the other two groups there are one or two outstanding cases. First there is the single case reported as improved in spite of anxiety in raids. The symptom in this case was truancy from school. The boy was an adolescent in a central school, of superior intelligence, very over-protected by his mother. He broke down in evacuation when he was separated from this protection and anxiety on his behalf, and continued to be difficult on return, trading on his power over his mother, who went so far as to excuse him from attending the clinic when he found it difficult. He has now become an air-raid messenger, and this adult position of responsibility appears to have helped him to a stability in other directions also. It is true that he has perhaps not been in real danger, since he lives on the outskirts of the city, where bombing is slight; but he has nevertheless achieved an adult position, which his mother would never allow him, and has responded to it by giving up his truancy. The statement that he is anxious comes from the mother, who herself is very disturbed by raids.

The next interesting feature is the group of cases in which the symptom was attributed to raids. One of these was sleep-walking in a girl, accompanied by anxiety dreams of "Hitler stabbing her"; the second was general "nervousness"; three were cases of truancy, the second of these being especially striking:

Case 6.—A boy aged 11. I.Q. 82. Referred for truancy from school. He has a cataract in one eye and is afraid of the other boys. Cannot stand up for himself. This boy, after being bombed out of one of the most devastated areas, denied all anxiety in the raid, saying: "The whole of the back of the house fell down and we were sitting on the cellar stairs, and mother was afraid, but I wasn't"; and then described a dream in which he was "shooting at Germans coming down in parachutes, but, of course, I wasn't afraid, but mother is afraid of invasion."

Of those whose symptoms were aggravated by raiding three are enuretics, and the aggravation in two of these bears a definite relation to nights when there are raids. One of these two is a child of 8 with a self-assured manner and a swaggering walk who constantly plays with toys representing the street of a town, with everything huddled close together; always there is a protective fire-engine and sandbags, but the play includes no aeroplane. Two are stammerers; in one of these the stammer is slight except when he is brought to talk on either evacuation or air raids, when it becomes noticeably worse. Two were reported unmanageable and to be pilferers, and one as over-aggressive and quarrelsome. One child aged 8, whose parents insisted he was quite unmoved, produced the following gruesome fantasy, none of which is fact, as there was not even an alert. "Last night I was coming out

TABLE III.—*Immediate Effect of Air Raids (Total Number known to have experienced Raids, 114)*

Reaction to Raids	Age Group			I.Q.			Effect on Symptom				Symptom attributed to Evacuation	Type of District		
	5–8	8–12	Over 12	B.	N.	S.	Improved	Worse	No Change	Symptom attributed to Raids		Heavily Bombed	Moderately Bombed	Lightly Bombed
Anxious ..	4	14	9	10	11	6	1	14	6	5	5, in 4 of which raids also made matters worse	6	6	15
No apparent anxiety ..	7	26	20	8	28	17	—	4	38	1	10	5	14	34
No report ..	6	16	12	6	19	9	—	—	29	—	5	5	16	13
Total							1 (1%)	18 (15%)	73 (62%)	6 (5%)	20 (17%)			

of the pictures when the sirens went and a little boy ran across the street, and they dropped a bomb and it went through his back and he was killed, and I went and told his mother and she screamed."

In the second group one case stands out as noteworthy. This boy was referred as a pilferer and as stopping out late at night and being unmanageable. He came from an extremely unhappy home where quarrelling was incessant. Both parents were almost blind ; the father was desperately ill and very irritable and difficult in the home, which was completely comfortless and in a heavily bombed area. His father died on the night of an air raid, and he showed no feeling about either one event or the other. One feels that this lad could permit himself to feel nothing lest life should become intolerable. Another was reported to be unaffected, yet will only sleep downstairs. Another, an adopted child, was said to "enjoy" raids and to stay out at night. As this left her adoptive mother alone in the house one wonders whether the mother's conclusion was really the correct one or whether the going out might not have been a deliberate act of aggression against her, as she is undoubtedly afraid.

Conclusion

It is striking that there seems to be little relation between heavily bombed areas and anxiety about raids. This point is strengthened by the fact that in another group of clinics situated in reception areas we have received from parents more complaints of children being anxious and disturbed by talk of raiding or sound of sirens, and that of these cases only two are evacuated from heavily raided areas ; the rest have experienced little more than the sound of sirens or distant guns.

The general conclusion to be drawn from these investigations would seem to be that, whatever the ultimate outcome, the immediate effect of evacuation, which is separation from parents and a known and accepted environment, is worse than the immediate effect of raiding—that the fantasy, waking or dream, of the raid is provocative of greater anxiety than the reality.

I wish to thank the Director of Education for Manchester for kind permission to publish these cases, and the staff of the Manchester Child Guidance Clinic for their help in collecting the material.

WARTIME PRESCRIBING

SCOPE OF NATIONAL WAR FORMULARY

Elsewhere in this issue the attention of practitioners is drawn to the *National War Formulary* (H.M. Stationery Office, 6d. net.), compiled by a committee appointed by the Minister of Health. Below we give some account of its scope and contents. From December 1 next this *Formulary* will replace the present *National Formulary* for national health insurance purposes, and on and after that date no preparation should be prescribed by title only unless its formula is contained in the *N.W.F.*, the *British Pharmacopoeia*, or the *British Pharmaceutical Codex*.

Under the heading of "Wartime Prescribing" it offers some remarks on general limitations. Agar, for example, should be reserved for bacteriological uses ; the use of cinchona as a bitter is discouraged ; quinine should be reserved for the treatment of malaria ; digitalis is best administered as 1/2 and 1 grain tablets of powdered digitalis ; and ergot, the liquid extract of which is not an economical preparation, is also best administered in tablet form. Vitaminized oil *B.P.* has the same vitamin content as a high-grade cod-liver oil, and is a satisfactory alternative in most cases. Economy in alcohol is essential, and alternatives to alcohol are suggested for preserving surgical instruments from rust, and to surgical and industrial methylated spirit for the prevention of bed-sores. A circular on economy in the use of alcohol in surgery was recently issued by the War Wounds Committee of the Medical Research Council. Liquid paraffin also must be prescribed with due regard to economy; where oral administration is considered necessary economy can be effected by using a 25% emulsion, but this, too, should be used sparingly.

Liver extracts are controlled under a Defence Regulation ; they are not to be administered save to persons suffering from pernicious anaemia or other megalocytic anaemias, nor given otherwise than by injection. Malt extract and preparations containing it should be prescribed only for children and tuberculous patients. Phosphorus is wanted for munitions. Phosphoric acid has been replaced by hydrochloric acid ; hypophosphites and glycerophosphates have been excluded, and sodium acid phosphate remains only for use in association with hexamine. Potassium compounds should be prescribed only where the corresponding sodium compounds are not satisfactory, but potassium acetate and potassium chlorate have been retained as the sodium salts are not satisfactory alternatives.

Prescribers are advised against the ordering of confections and lozenges, which require sugar. Dextrose and glucose are rarely necessary except for intravenous and rectal administration. Sulphanilamide, sulphapyridine, and sulphathiazole in tablet form are included in the *Formulary*, but there is a note that the first of these is the most generally useful drug in the group, and should be prescribed unless there are specific indications for either of the others. A list of more than a dozen other drugs and their preparations which should be prescribed with particular regard to economy is given ; these include salicylic acid and its salts, mercury and its compounds, hyoscine, and atropine. It is enjoined that the use of distilled water should be restricted to preparations for application to the eye and preparations in which, in the opinion of the dispensing pharmacist, the use of ordinary potable water would result in an undesirable alteration to the medicament.

Proprietary preparations, particularly those of foreign origin, should be avoided if possible. Many of them, in any case, are unobtainable, and their prescription would lead to inconvenience and delay. A list is given of proprietary drugs with corresponding non-proprietary equivalents, and prescribers are urged if possible to use the *B.P.* preparation.

Replacements and Limitations

Briefly to glance at some of the formulae, the first list is of six preparations for ear-drops. These are the same as in the *N.H.I. Formulary* save for some reduction of glycerin and rounding off of percentages. Five forms of capsule are indicated, but it is stressed that tablets and pills are generally preferable. Certain capsules formerly described, such as those of ergot, sandalwood oil, and preparations of iron, are omitted. On the other hand, capsules of concentrated solutions of vitamins A and D and of halibut-liver oil are added. The linseed poultice is discouraged ; the only entry under "Poultices" is the kaolin poultice *B.P.* Among mouth washes the principal changes are the substitution of sodium for potassium and a new formula to replace glycerin of thymol.

Four flavouring and sweetening emulsions—aniseed, aniseed with peppermint, chloroform, and peppermint alone—have been introduced for mixtures in place of alcoholic preparations. Enemas are a new group as compared with the old *Formulary* ; they include enemas of ox bile, of soft soap, and of oil of turpentine. The glycerins number two. A solution containing 25% of glycerin and 10% of sodium chloride has been introduced for intra-uterine use in place of pure glycerin. A glycerin of proflavine, which is evidently considered an improvement on acriflavine, is also included. The injections are mostly *B.P.* injections, but a new one, injection of papaveretum (2%), an antispasmodic preparation (dose, 5 to 10 minims), has been introduced. As a vaginal injection zinc sulphocarbolate is replaced by zinc sulphate. A good general linctus, with syrup as the basis, has been provided ; in spite of economy in the use of sugar the need for one good sweet preparation was felt.

Linctus Simplex (Linct. Simp.)

Dilute sulphuric acid	5 minims
Emulsion of anise *N.W.F.*	2½ „
Emulsion of chloroform *B.P.C.*	5 „
Solution of Bordeaux B *B.P.C.*	1 minim
Syrup	to 60 minims

Liniments have been so framed as to save alcohol and to exclude the drugs mentioned for exclusion in the War Memorandum of the M.R.C. It is mentioned that strict economy should be observed in prescribing liniment of soap *B.P.* because it contains so much alcohol.

The formula of liquor antisepticus has been changed to meet wartime conditions. Chlorine antiseptics have also been overhauled. Eusol is not recommended, as being unstable ; on this ground Dakin's solution or a new 2% solution of chloramine is preferred. A borax and formaldehyde solution is given for use in place of alcohol for preserving instruments in a sterile

condition and free from rust. This is one of a number of possible formulae for a solution to replace spirit. It is possible that it might be improved by the omission of formaldehyde, to which some surgeons object, and the substitution of chlorocresol for phenol. A new lotion containing 25% of sodium sulphate, approximately saturated at ordinary temperatures, is included for the hypertonic treatment of war wounds and similar conditions. Lotio flavinae, formerly an undefined term, is now specified as a 0.1% solution of proflavine sulphate in normal saline solution.

A Wide Choice of Mixtures

The mixtures—a long list—have in many cases new names, but cross-references to the old mixtures are given. Gentian is replaced by quassia, magnesium sulphate by sodium sulphate, alcohol is reduced in quantity everywhere, glycerin is excluded, phosphoric acid replaced by hydrochloric acid, extract of liquorice as a sweetening agent removed or reduced in quantity. For example:

Mistura Quassiae Acida (Mist. Quass. Acid.)

Dilute hydrochloric acid	10 minims
Infusion of quassia	120 ,,
Chloroform water	to ½ fl. oz.

Dose: ½ fl. oz. three times a day in water.

Bismuth mixtures are entirely discouraged, a list of six alternatives being given, among them new mixtures containing magnesium trisilicate and kaolin, thus:

Mistura Magnesii Trisilicatis Composita (Mist Mag. Trisil. Co.)

Magnesium trisilicate	10 grains
Light magnesium carbonate	10 ,,
Sodium bicarbonate	10 ,,
Peppermint water	to ½ fl. oz.

Dose: ½ fl. oz. three times a day in water.

Mistura kaolini is similar, 15 grains of kaolin replacing the magnesium trisilicate.

A new formula for mistura diuretica is:

Mistura Potassii Acetatis (Mist. Pot. Acet.)

Potassium acetate	30 grains
Decoction of broom *B.P.C.*	to ½ fl. oz.

Dose: ½ fl. oz. three times a day in water.

Cough mixtures are the subject of a special paragraph. A list of nine is given, and there is a note: "If mistura tussis is prescribed without qualification mistura ammoniae et ipecacuanhae composita will be supplied":

Mistura Ammoniae et Ipecacuanhae Composita (Mist. Ammon. et Ipecac. Co.)

Synonym: *Mistura Expectorans, Mistura Expectorans Nigra, Mistura Tussis*

Ammonium carbonate	3 grains
*Liquid extract of ipecacuanha	½ minim
†Concentrated camphorated solution of opium *N.W.F.*	2 minims
Solution of burnt sugar *B.P.C.*	7½ ,,
Water	to ½ fl. oz.

Dose: ½ fl. oz. three times a day in water.

* Equivalent to 10 minims tincture of ipecacuanha.
† Equivalent to 16 minims camphorated tincture of opium.

Sprays, Pastes, and Powders

The list of nebulae includes a new aqueous ephedrine spray (1% in a 0.5% saline solution). Among the pastes is the following new formula:

Pasta Picis Carbonis (Past. Pic. Carbon.)

Commercial coal tar	¼ grains	3% approx.
Zinc oxide	120 ,,	25% ,,
Starch	120 ,,	25% ,,
Yellow soft paraffin	to 480 ,,	100% ,,

In wartime strict economy is essential in prescribing this paste. The use of magnesium sulphate paste is not favoured, and the hypertonic lotion of sodium sulphate is recommended as an efficient alternative. The pigmenta include the following formula for pigmentum triplex, suggested in treatment of burns:

Pigmentum Triplex (Pig. Triplex)

Crystal violet	1 grain	0.25% approx.
Brilliant green	1 ,,	0.25% ,,
Proflavine sulphate	½ ,,	0.1% ,,
Distilled water	to 1 fl. oz.	100% ,,

The powders include flavoured preparations of barium sulphate and iodophthalein for diagnostic purposes:

Pulvis Iodophthaleini Compositus (Pulv. Iodophthal. Co.)

Iodophthalein	60 grains
Citric acid	24 ,,
Lactose	80 ,,
Sucrose	to 240 ,,

Dose: 240 grains in a tumblerful of water, stirred until mixture is white.

For internal use, to replace compound bismuth powders, powders containing kaolin and magnesium trisilicate are prescribed, thus:

Pulvis Magnesii Trisilicatis Compositus (Pulv. Mag. Trisil. Co.)

Magnesium trisilicate	240 grains
Sodium bicarbonate	240 ,,
Heavy magnesium carbonate	240 ,,
Chalk	240 ,,

Dose: Half a level teaspoonful in a little water.

Note: The titles "alkaline powder" and "pulvis alkalinus compositus" should not be used to describe this or any other preparation.

Pulvis Kaolini Compositus (Pulv. Kaolin. Co.)

Sodium bicarbonate	160 grains
Heavy magnesium carbonate	320 ,,
Kaolin	to 960 ,,

Dose: One level teaspoonful in water or milk.

There is a long list of tablets, and the new ones include ascorbic acid, nicotinic acid, aneurin hydrochloride, sulphanilamide, sulphapyridine, sulphathiazole, laxative compound (cascara compound), digoxin, and stramonium. Sulphathiazole is, however, very scarce at the present time, and, although the tablets are included in the *N.W.F.*, practitioners are requested, in order to avoid delays and difficulties, to refrain from prescribing them for the present.

The Children's Section includes a zinc cream, three malt extract preparations, a simple linctus, and a number of mixtures, several of which are the same as in the General Section but in smaller doses. In the Children's Section it is considered that a reasonable use of syrup may be made.

It will be seen from this outline that the compilers have held the balance between what is necessary in prescribing and the requirements for the war effort. It is to be hoped that practitioners will second their endeavours.

DRUGS EXEMPT FROM PURCHASE TAX

It will be remembered that in the early announcements on the application of the Purchase Tax to drugs and medicinal preparations (*Journal*, February 1, 1941, p. 163) total exemption from tax was allowed in the case of "essential drugs of an exceptionally costly character." This, as we pointed out, was a clumsy definition, and the first list of the drugs covered was obviously incomplete. The Commissioners of Customs and Excise have now issued in Notice No. 78B a schedule of the classes of drugs which are exempt from the tax. These are as follows (Group 5 is not included, as it refers to substances to be used solely for veterinary purposes):

Group 1.—Exempt only when sold without any added substances: Bromethol; chloroform (anaesthetic); cyclopropane; ether (anaesthetic); ethyl chloride; nitrous oxide; oxygen.

Group 2.—Exempt whether sold as such or prepared with an excipient, vehicle, base, or preservative (mixtures of these substances and mixtures of one or more of them with any other substance not being an excipient, vehicle, base, or preservative, are chargeable): Liver extracts and active principles of liver. Insulin, and compounds whereof the sole constituents are insulin, protamine, and zinc. Preparations of the parathyroid glands. Pituitary (posterior lobe) extract as defined by paragraph 1 of the Fifth Schedule to the Therapeutic Substances Regulations, 1931, made under the Therapeutic Substances Act, 1925, and other preparations of the posterior lobe of the pituitary gland. Thyroxine and preparations of the thyroid gland. Oestrone, oestriol, oestradiol, esters of any of those substances, stilboestrol, and hexoestrol. Extracts of the cortex of the suprarenal glands: corticosterone, desoxycorticosterone, and esters of corticosterone and desoxycorticosterone. Extracts of the corpus luteum: progesterone, and the substance commonly known as pregneninolone or anhydrohydroxy-progesterone. Testosterone and its esters. Chorionic gonadotrophin (human). Desiccated stomach. The dimethylcarbamic ester of 3-hydroxyphenyl-trimethylammonium-methylsulphate.

Group 3.—The following may be mixed with one another and with an excipient, vehicle, base, or preservative, and still be exempt, but

the presence of any other substance makes the mixture chargeable: Adrenaline and its salts; amylocaine hydrochloride: arsphenamine, derivatives of arsphenamine, and salts of such derivatives; cocaine and its salts; ergometrine and its salts; hexobarbitone and hexobarbitone soluble; morphine and its salts; papaveretum; para-aminobenzenesulphonamide and its salts, derivatives of para-aminobenzenesulphonamide having any of the hydrogen atoms of the para-amino group or of the sulphonamide group substituted by another radical, and salts of such derivatives; procaine and its salts; the sodium salt of 5-ethyl-5(α-methylbutyl)-thiobarbituric acid.

Group 4.—Sera, vaccines, toxins, antitoxins, and antigens which are subject to control and licensing under the Therapeutic Substances Act, 1925, are exempt when prepared for use by injection or by application to the scarified skin; mixtures so prepared are also exempt.

Group 6.—Phenthiazine or thiodiphenylamine is exempt when sold as such.

It is also announced that forceps and tweezers exceeding 3 inches in length or shaped away from the straight, scalpels, lancets, and other chiropody knives with metal handles are exempt from tax.

THE BRITISH HOSPITALS ASSOCIATION

The address of Sir Bernard Docker, chairman of the British Hospitals Association, at the recent annual general meeting of that body, touched on several matters of present and future interest. The first was nurses' salaries. He said that the Minister of Health had announced increases of salary, not only for the Civil Nursing Reserve but for hospital nurses generally. The association had endeavoured to secure financial assistance from the Ministry to enable hospitals to meet the cost of raising nurses' salaries. The Minister's first suggestion was to give certain assistance to voluntary hospitals through local authorities in a manner which was not acceptable, but the association had now been appointed by the Government to distribute grants for the purpose of meeting the cost of the increases. This meant that the association had been recognized as the central and representative body. The association had been considering its policy with regard to co-ordination of hospital services. The statement of policy was now in draft and would be issued shortly.

With regard to the position of hospital staffs called up for various forms of war service, strong representations had been made to the Government on the need for reservation. It was clear that, unless some arrangements of a better nature than those obtaining at present were made, hospitals might be compelled to stop their work, not for want of medical or nursing skill but for want of other staff.

Sir Bernard Docker went on to refer to the reply given in the House of Commons on October 9 by the Minister of Health to a question by Sir Francis Fremantle on post-war hospital policy and organization. He saw nothing in Mr. Ernest Brown's statement that was not fair, friendly, and helpful. The association was in agreement with the object of making the hospital services readily available to every person in need of them. It was evident that the Government intended to maintain the principle by which patients were called upon to make reasonable payment towards cost either through contributory schemes or directly.

Finally he touched upon the scheme recently propounded—and indeed created—by Lord Nuffield, with the object of assisting the formation of mutual insurance to assist the middle and professional classes to meet the cost of specialized or surgical treatment in hospital pay-beds or nursing homes. It will be recalled that Lord Nuffield has established a Provident Guarantee Fund of £150,000 with this end in view (*British Medical Journal*, October 25, p. 584). Sir Bernard Docker said that his association could and should subscribe to this policy. He also welcomed a Government announcement that increased educational grants for teaching hospitals were contemplated. He ended with a tribute to the Minister of Health for the open-minded way in which he had consulted the association on various matters. The Minister had said that it was intended to lay on local authorities the duty of securing close co-operation with voluntary hospitals. Sir Bernard Docker would have welcomed an indication that he was prepared to offer voluntary hospitals a share in statutory responsibility.

Reports of Societies

WATER DEFICIENCY

At a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland, when Dr. A. R. PARSONS presided, Dr. R. H. MICKS read a paper on water deficiency.

Dr. Micks said he intended to discuss the problems of dehydration without reference to the dehydration of surgical shock or the dehydration caused by extensive burns. So much knowledge of these two subjects was at the moment being acquired in other countries that it was too early to attempt to lay down a systematic teaching on the subject. The phenomena of water deficiency might be divided into three stages: the first, those of the falling water reserve, symptomless except for the loss of about one-twentieth of the body weight; second, those of dehydration without circulatory collapse, the symptoms of which were a dry tongue, loss of elasticity of the skin, haemoconcentration, and the beginning of impairment of renal function; third, dehydration plus circulatory collapse. The recognition of the first stage was important, as the proper treatment of dehydration was to anticipate its onset, as could easily be done by careful measurement of the water balance, or, in the infant, frequent weighing. When dehydration was due to excessive loss of body fluids the administration of sodium chloride was just as important as water. In dehydration plus circulatory collapse the intravenous route should be used, and at times hypertonic saline was required. In general the solution administered should be normal saline, but there was evidence that for rapid rectal absorption 0.18% saline was better. Glucose solutions were not necessary except when parenteral feeding had to be maintained for a long time, and sometimes in diabetic coma. There was little reason to think that either special alkalinizing fluids or fluids containing calcium or potassium salts were useful, except, possibly, in certain rare cases. Dr. Micks pointed out that there was a danger of over-emphasizing the intravenous route, which was only required in emergencies. In many cases fluid could be administered orally or by nasal tube. Rectal drip, too, was satisfactory in many cases, and enough fluid could be given that way to maintain life and compensate for a considerable abnormal loss. Subcutaneous administration of large volumes of fluid was little practised now, while the intraperitoneal route he considered to be usually unsatisfactory, as little fluid could be administered.

Prof. W. R. FEARON pointed out that water deficiency was usually a question of salt deficiency and salt balance. Once the cell membrane was complete the ions did not tend to escape readily from the cell. There was no mechanism equivalent to that of thirst to indicate when there was too much water in the body. If the osmotic pressure of the urine were known the osmotic curve from hour to hour could be drawn, thus indicating the state of water balance at any time. The treatment of dehydration was physiologically the administration of saline. There was no doubt that far more harm was likely to be done by giving too little water than by giving too much. Prof. W. J. E. JESSOP considered that water restriction in cases being treated by sulphonamides was dangerous on account of the formation of drug crystals in the kidney. He had found such crystals, which had proved to be sulphapyridine. They were deposited on account of the insufficient fluid intake of the patients.

The President (Mr. SETON PRINGLE) said that surgeons had recognized earlier than physicians the possibility of severe and perhaps fatal dehydration. He had been a pupil of Arbuthnot Lane, who in every major operation had inserted a needle under each breast and had given two or three pints of saline. This, of course, was not always applicable, but it was a very great help in the first and second stages of dehydration; it was useless in the third stage. He had found that saline without glucose gave a most satisfactory result. Rectal drip had been the routine method for many years, but in many patients it had proved uncomfortable and inconvenient. If serious dehydration was feared this method was tedious and not really satisfactory. Instead of this drip method a reservoir of saline was now used, which was connected with the rectum through a very

wide tube; the saline was only taken up from the bag as it was needed, and thus the rectum never became distended or uncomfortable. Prof. T. W. T. DILLON pointed out that one of the most important things was to have some easy test which would show when enough water had been given. The obvious place to look for such a test was in the urine. If the specific gravity of the urine was taken it would be seen that water repletion coincided with a sharp fall in specific gravity. Dr. R. E. STEEN said early treatment of dehydration was important in cases of gastro-enteritis. While he had had no experience of saline by the intramuscular route, he thought it was possible to give an equal amount more satisfactorily intravenously. There were certainly definite indications for the intravenous drip method in young children.

Mr. J. C. FLOOD thought it wise to emphasize that too much water might be taken. Up to about two years ago there had been a tendency to give water under every condition of surgical collapse. One had to distinguish between dehydration due to water going out of the body and that due to water coming out of the blood channels. There was considerable chance of the patient being over-dosed if he was suffering from shock associated with a water shift out of the blood vessels into the tissues. When a patient was receiving post-operative transfusions and salines a record should be kept of the total fluid intake and the total fluid excretion every day. Dr. A. SPAIN did not consider that the intravenous route was suitable in an emergency away from a hospital. In such cases the subcutaneous route was very efficient; it was astonishing the rapidity with which a patient would absorb fluid if one pint was put under each breast. This could be done without causing the patient any inconvenience.

Correspondence

Post-war Medicine

SIR,—Much has been written recently on the future of the medical services of this country, and it is perhaps of interest to analyse the factors which have created the present feeling of instability.

1. It is more than probable that the post-war Government will be either socialistic or semi-communistic. The Conservative Party will almost certainly be defeated, for the Labour Party will hold them responsible, rightly or wrongly, for pre-war diplomacy and inadequate preparation for war. The Socialists are already pledged to State medicine and will carry out this policy at the first opportunity.

2. Voluntary hospitals and organizations have previously depended upon charity. It is difficult for anyone to believe that the finances of the country will be able to bear the strain of distributing charity to voluntary hospitals and organizations. Moreover, it is unlikely that bequests to State-aided institutions will be made with any frequency. This implies that voluntary hospitals and organizations must become in time State-aided and perhaps State-controlled.

3. In modern civilization the medical services are far too elaborate and expensive to be dependent upon charity alone. It is argued by some that no sick person should be dependent upon charity for hospital treatment, and that the care of the sick should be the business of the State, just as it is the affair of the Government to educate the children of the working classes.

4. The moment is ripe for planning and reorganization. Surely the first step is to plan a medical Utopia and to let all efforts be directed towards establishing this ideal state of affairs. A medical Utopia cannot be obtained immediately, and obviously many years must elapse before it can be established in running order; yet if the ideal is before us every alteration in the medical services should be directed toward this goal.

5. Correspondence in the medical journals has shown that there is a haunting fear among medical men that they may be smothered by red tape and faulty administration from Government bureaucracy. It is most likely, however, that drastic changes will be made in Government administration as a result of the very severe criticisms which have been made during the present war. Furthermore, few people can complain of the efficiency with which the Treasury extracts income tax from us all. Medical men as a whole love their independence, and one of the greatest attractions of the profession is that a man, if he chooses to do so, may carry on his professional work with few restrictions and little interference from higher authorities. Many medical men therefore look with dismay towards the prospect of their professional work being controlled by the State.

The Government has now committed itself to reconstruction and replanning of the nation's medical services. It seems to me that such reconstruction should be planned by the best intellects of our profession. It is essential that the medical profession itself should play a very important part in the reconstruction. Perhaps the best solution would be for a Royal Commission to investigate the problem. The Commission should contain men nominated by the General Medical Council, the British Medical Association, the Medical Research Council, and the Ministry of Health. The Treasury and the Ministry of Public Works and Buildings would have to be represented as well. In my view the members of the committee should be young men under the age of 40. We should remember what was achieved by the young men at Johns Hopkins, and history shows that a man's best original work is usually done before the age of 35. Originality and thoughts of the future are much more important in the work of reconstruction than remembrances of past glories.

In my view it would be a great mistake for the work of reconstruction and the formation of policy to be in the hands of Government Departments. The findings of a Royal Commission would be above the level of Government Departments, and this is perhaps the fundamental consideration.—I am, etc.,

Bradford-on-Avon, Oct. 25. WILFRED SHAW.

The Optimum Size of an Organization

SIR,—Recent discussions open a great problem which must be faced. The optimum size of any organization is a modern problem which is rapidly gaining in importance and receiving attention. It has arisen in my mind largely from the growth of the Victorian Bush Nursing Association. There are built, and organizing, sixty-two hospitals, none of which provides more than thirty beds, mostly less, with a total of more than 700 beds. They are one-storied. They provide bedrooms with one or two beds, and in the later types no wards. They are staffed by doubly and trebly certificated nurses, not by trainees. They receive no Government aid, except passes on the railways for the nurses, but they can, and do in some cases, receive municipal aid. The charges to those who pay 30s. a year subscription for themselves and their children up to the age of 16 are, I think, the lowest in the world for superb accommodation, being about £2 12s. a week—less before the war. They are decentralized and managed locally, subject to the general rules of the association.

People naturally think that if this large number of operating rooms, bathrooms, and nurses' quarters (which are excellent) could be placed in one building the cost of building and administration would be much less. As a matter of fact it would be multiples of their cost. They cost up to £400 a bed, and until the war usually less. The large city hospitals have cost from £1,600 to £2,000 per bed. The personal attention in the small hospital is a factor to which the country people are keenly alive. They have a maternal death rate of 2 per 1,000, whereas the State has a rate of 4.44 per 1,000. The neonatal death rate is half the State rate. This the country women fully understand. The only services they cannot supply are a pathological department and a deep *x*-ray therapeutic department; but these can be obtained at near-by centres.

But I am not writing to praise the Victorian Bush Nursing Association, but, based on the knowledge gained, to ask some questions. Can a city, a university, a factory, or hotel become uneconomical and almost inhuman from being too large? Bata taught the world this lesson at Zlin, in Czechoslovakia. The huge institution becomes unwieldy from the administrative point of view, and in the case of hospitals from the human point of

view, and is far too costly. Do not all these facts apply with force to any organization? I find town planners who think a city should not contain more than 500,000 people. As the world has developed it is impossible, for example, to decentralize London to any great extent, or even Sydney or Melbourne, but the price paid is heavy—a lower birth rate and heavy mortality in the cities, not to speak of want of space, slums, and the like.

So I ask those who see what is wrong to put to themselves the question: What is the optimum size of any organization? Should, for example, a university be better if it housed nearly 5,000 students—a number being approached in Melbourne—than the huge institutions in the United States? To my knowledge university authorities in some of the magnificent universities in the U.S.A. realized the position many years ago, but found the task of limitation almost impossible, and I am afraid the Australian universities may find similar difficulties.

I may refer to a most remarkable fact which has come under my notice, and to which I drew attention at the Amsterdam Congress on Tropical Colonization, and also long before. Tropical Queensland is largely pastoral and agricultural, but does contain some small cities. The vital statistics in this region, whether birth rate or death rate, are better than in the rest of Australia. The high temperature has done no damage and tropical diseases are practically absent. In general in Australia the country birth rate is always greater than the city birth rate. To me the lesson is obvious, but the remedy is difficult.—I am, etc.,

JAMES W. BARRETT,
Honorary Secretary, Victorian Bush Nursing Association.

Melbourne, July 28.

Medical Planning

SIR,—Reading the correspondence and the reports that are available from the Medical Planning Commission and listening to medical conversations, it seems to me that attention is focused on what is to be done after the war without first considering what are the defects we wish to remedy and under what conditions the remedies will have to be applied. It is as if a number of doctors were consulting about a patient: one advises ultra-violet light treatment, another sulphapyridine, a third bleeding, and a fourth a winter in Egypt, all without having troubled to make a diagnosis or to consider what treatments may be available.

With great diffidence I suggest that first a list should be drawn up of those points concerning the profession or the public on which reform is desired. It is possible the Commission might agree on these points after discussion. Secondly, there should be an attempt to estimate what will be the after-war conditions under which the reforms will have to take place. About this agreement will be difficult, and whatever the estimates there will be much that has not been foreseen. But the attempt should be made none the less. A small point to serve as illustration. Much practitioner time is wasted giving certificates to chronic invalids. By a medical board system, on the lines of the Pensions Ministry, it should be possible to estimate the disability of these patients, if not permanently, at any rate for some time ahead.—I am, etc.,

Paignton, Oct. 24. ERNEST WARD.

Hospital Policy

SIR,—The Minister of Health has made an important declaration in Parliament on post-war hospital policy. The substance of this declaration is admirably summarized in the last few lines of your leader (October 18, p. 552) on Government hospital policy—namely, regionalization, co-operation between voluntary hospitals and local authorities, and Exchequer grants.

The Minister has every reason to congratulate himself upon receiving a very good "press" for his declaration of policy, although there may well be some misgivings and doubts in the minds of those who fear that too much control will be given to the local authorities by reason of the fact that apparently the State financial aid will be made through them and not direct to the voluntary hospitals or some recognized organization acting on their behalf, such as the British Hospitals Association, as has already been done in the case of the additional cost of nursing staff.

The Minister's policy has yet to be debated and approved in Parliament, and therefore it may still be capable of modification. In these circumstances it may be worth while considering whether any amendment of the proposals can be suggested which would meet with more general acceptance. In this connexion it should be borne in mind that to bring about close co-operation between the local authorities and the voluntary hospitals it is fully recognized by the Government that "to achieve the best results and to avoid a wasteful multiplication of accommodation and equipment it will be necessary to design such a service by areas substantially larger than those of individual local authorities." In other words, there must be a grouping together of a number of individual local authorities into regional areas. Clearly such regional areas must have regional councils, whose primary concern will be to translate into actual practice the principles underlying the Government's hospital policy.

Regional councils will presumably be constituted of representatives of the local authorities and voluntary hospitals of the area concerned. One of the first practical difficulties will be whether the numbers of such representatives upon the regional council are to be equal or based upon the numbers of municipal and voluntary hospitals or on the numbers of beds or on some other basis. It is obvious that in this direction there are endless possibilities for differences of opinion which alone may seriously prejudice the harmonious co-operation so eminently desirable and, indeed, fundamentally necessary to achieve success for the Government's policy. For this reason I suggest that it should be definitely decided that the representation of the municipal and voluntary hospitals upon such regional councils should be based upon an equal number of representatives, and, further, that in order to ensure, as it were, "fair play" for both parties, the Minister should take power, by Act of Parliament if necessary, to nominate in addition a certain number of representatives of the Ministry, altogether apart from those chosen to represent the local authorities and voluntary hospitals.

Many good reasons could be adduced for this suggestion. Let it suffice, however, to say that such a tripartite constitution is justified, first of all, by reason of the fact that the Government is providing financial assistance, presumably capital as well as maintenance, for both municipal and voluntary hospitals. Secondly, the presence of representatives of the Ministry upon regional councils would help to ensure that the Government policy is being honestly and conscientiously carried out, and that the Minister through his own representatives is being kept in close touch with the development of the Government's policy throughout the whole country; and, finally, the presence of representatives of the Minister would go a long way towards the promotion of that mutual confidence and active co-operation between the local authorities and voluntary hospitals which is absolutely vital for the success of the scheme. If it became possible for regional councils throughout the country to be established on such a basis then it seems to me their position and influence would be immensely strengthened by making such councils the agency for the distribution of financial aid provided by the Government, and one would hope, in addition, financial aid provided from local authorities and charitable bodies such as King Edward's Hospital Fund for London and the Nuffield Provincial Hospitals Fund, as well as a host of smaller but none the less important funds.

It is tempting to enlarge still further upon the many advantages which would accrue to the community from such a suggestion as is outlined above, but in the meantime it would be interesting to learn the views of your many readers on that which has already been suggested.—I am, etc.,

Criccieth, Oct. 28. FREDERICK MENZIES.

Voluntary Hospitals

SIR,—The sweeping statement of Dr. G. Osborne (October 18, p. 558) that municipal hospitals are of lower grade than voluntary ones is not "true, kind, or necessary." In fact, it merely demonstrates that his personal experience has so far been distinctly limited. In addition, however, it expresses a feeling which is regrettably prevalent among the general public, and which may have inspired Sir Frederick Menzies's first letter. Correspondents have already pointed out that municipal hospitals, any more than voluntary ones, do not all

reach the same standards of efficiency, equipment, and staff. Most of the criticisms levelled at municipal hospitals are local ones and not inherent in the system, as Dr. Goodhart (p. 558) has explained.

There is, however, the one essential inherent difference between the two systems. The one type is municipal—that is, maintained by public funds, subject to Government scrutiny and audit, and governed to some extent by law. Thus the voluntary hospital can exercise some selection in admitting patients, but not the municipal one, so that "uninteresting" cases, especially of a chronic nature, gravitate to the latter.

Furthermore, the voluntary hospital, depending on free gifts, of necessity employs and relies on propaganda. This propaganda is directed to the increase of personal interest and often personal voluntary work. This personal interest is the great direction in which the voluntary system as a whole has such an inherent advantage over the municipal, and the interest begets influence. Mass interest of this kind is illustrated by the suppression of justifiable complaints against voluntary hospitals, whereas municipalities are popular targets. The influence of the voluntary system is illustrated in the Emergency Hospital Service, in which an extreme minority of senior administrative positions have fallen to members of the municipal services. It is this aspect which causes disquiet to members of the municipal services when plans for a future national hospital service are discussed.—I am, etc.,

St. Olave's Hospital, Rotherhithe, Oct. 21. R. KELSON FORD.

SIR,—It is time that the idea of altruism in hospitals should be discarded. Their history shows that they never were either in origin or in their life altruistic. They have been throughout the ages instruments of exploitation. They are so yet. Their origin was the result of exploitation, when the Emperor Claudius started them to patch up for further service his broken slaves. Except that Claudius has changed from time to time to other agents, their function remains to-day the same. That being so, a sewage scheme holds as much altruism as a hospital.

The voluntary hospital is supposed to treat the sick poor. Now sickness treatment is a fundamental necessity of mankind. It should therefore be regarded as a duty like dealing with sewage. Who are the poor? A man is poor either because he is paid an inadequate wage by an employer or, having a sufficient wage, he wastes it. Hospitals therefore bolster up either a bad employer or a bad employee. The voluntary hospital as an instrument of exploitation has been used by kings, emperors, the Church, big business, the politicians, and a section of the medical profession. It is now in its death throes, as the man in the street is awakening to the real meaning of altruism.

The rate-supported hospital has therefore risen on the same honest foundation as has a sewage scheme. It removes the horrible idea of charity in the treatment of sickness and will eventually replace the voluntary hospital. What a travesty of Christianity it is to see the shepherd wrapped in the fleeces of his flock enjoy the amenities of a private nursing home when sick, while his ailing shorn sheep brave the austerities of a public hospital! I admit that the rate-supported hospitals may have certain flaws inseparable from the political atmosphere about them. That seems inherent in all politics, but the courts so far have been able to prune them when too exuberant. We here in Glasgow are busy at present. We have made a good start, and if we go on as we are doing an increasing number of the elected of democracy will be evacuated to more congenial surroundings.—I am, etc.,

Dennistoun, Glasgow, Oct. 27. JAMES COOK.

The Art of Surgery

SIR,—The distinction drawn by Dr. Frank C. Eve in your columns (October 25, p. 593) between two classes of surgeons, as he sees them, is most intriguing. He says a Class A surgeon practises surgical artistry, whereas Class B is a surgical tradesman. If the distinction could be hammered into all surgeons of all classes it would have the effect of changing many Class B surgeons into Class A surgeons, with great benefit to their patients and to themselves. Such is my faith in human nature.

The surgical artist is one who, when asked to perform an operation, however trivial or serious, thinks along clear lines of the approach to the patient, the steps of the operation, and the benefit likely to come to the patient. He never gives a thought to the benefit likely to come to himself, except that he may increase his skill for the benefit of the next patient. His mind is a blank about the fee. The surgical tradesman, on the other hand, is alive from the first to the financial reward. He sinks, I fear, the patient's benefit to second place. Such a man never advances the art of surgery by any improvement in technique or theory. He is mundane and no adornment to his job. Whole towns are full of the Class B kind, brought into being, perhaps, by a pioneer surgeon of a past generation or by the general atmosphere of commercialism of the town; but whole towns are, thank God, full of the Class A kind. But among the Class B kind the practitioner who wants the best for his patient can find the surgical artist if he will look.

Here is another point. Every man who "goes in" for surgery does not become a surgeon. Before any man is permitted to sit for a higher surgical qualification, which he hopes will bring the surgery to him, he should go before a surgical "board" of the Royal Colleges and have a test in manual dexterity. It would be quite easy to devise suitable manipulations. Thus would clumsy men be eliminated, for if they go on I believe they become the surgical tradesmen—men working under difficulties, straining to reach the same skill as the artist.

It goes without saying that all surgeons of all classes, and no less physicians, should aspire to be Class A, and if they find themselves drifting should take themselves firmly in hand. —I am, etc.,

Great Malvern, Oct. 28. A. C. DEVEREUX.

Reaction after Transfusion

SIR,—The cause of reactions following transfusions in many cases remains obscure. It has been suggested that in some instances at least the fault is in the recipient rather than in the donor's blood. The following observations favour this hypothesis. Blood from the same bottle, using the same administering unit, was given to two patients; one had a severe rigor, the other had no reaction. For obvious reasons such an experiment is not easy to arrange; it therefore seems worthy of record.

The first patient (Case S) had a subphrenic abscess and developed an empyema. The haemoglobin prior to transfusion on September 5 was 48% and his red blood cell count 3,900,000 per c.mm.: blood group O (IV). Cross-matching of the blood was not done. A transfusion was started with stored blood (Group O (IV)) at a rate of 40 drops a minute. Following our usual custom, the last two feet of the tube conveying the blood were warmed on a hot-water bottle enclosed in a woollen cover (temperature unknown). After approximately 150 c.cm. of the blood had been run the patient had a severe rigor lasting twenty minutes. The temperature was 101° F., and he was severely ill, requiring the administration of oxygen.

Less than fifteen minutes after stopping the first transfusion, the same bottle of blood and administering unit, with the exception of a clean needle, was set up for a second patient (Case B). This patient had a carcinoma of the bladder with severe haematuria. He had already had several transfusions of stored blood without ill effects. His group was O (IV) and cross-matching of the blood was not done. Prior to transfusion his haemoglobin was 34%, and his red blood cell count was 2,220,000 per c.mm. The blood was given at approximately 40 drops a minute. The remaining 390 c.cm. were taken by this second patient without ill effects, the haemoglobin rising to 40%.

It is of interest to note that the first patient (Case S) had another transfusion of fresh blood, given slowly (40 drops a minute), on September 17. This caused a severe rigor after ten minutes. On September 26, when his haemoglobin was 43%, he took half a pint of stored blood (ten-day-old) given quickly without any ill effect. When his general condition had deteriorated further he had another severe rigor following a transfusion with stored blood given slowly (40 drops a minute) and died six hours later. His death was in no way due to the transfusion, as he had had a long and exhausting illness associated with a liver abscess and large empyema.—I am, etc.,

R. D. N. BISSET, F.R.C.S., D.A.

Park Prewett Hospital, Basingstoke, Oct. 27.

Wound Shock: A Heated Couch

SIR,—The whole question of shock seems to be very obscure, but everybody is agreed that a shocked patient is cold and that it is very important to get him warmed up again. If a patient is to be warmed at all it seems only sensible to warm him at once and to warm him quickly. There appears to be no doubt that if a man is chilled by exposure, without any injury, he can restore his own warmth to a great extent if given a reasonable chance. But if a man is wounded his heat-regulating mechanism is put out of action and he cannot restore his own heat: he must be heated. If the patient is wounded and also chilled by exposure his condition soon becomes desperate, and it will be a question whether he can be heated up quickly enough to save his life.

I want to suggest to those responsible for the disposal of air-raid casualties that as a general rule cases should not be sent direct to hospital; they should be sent to a near-by first-aid post to be treated for shock until they are fit for operation. The primary purpose of the F.A.P. should be the treatment of shock, and it should be equipped with everything required for the purpose. It is easy enough to heat a patient quickly if electrical gadgets are available, but it must be assumed that in an air raid the electric current and the gas supply will be cut off. The problem is to get some heat underneath the patient: an oil stove under the stretcher is much too dangerous and metal water-beds are unobtainable. I beg to submit the following improvisation.

A table is built to carry the standard stretcher; in the middle of the table-top a well is made to hold five petrol tins lying on their broad sides. The well is lined with blankets, and the tins, filled with boiling water, are covered over with blankets. A few inches from the corners of the well slots are cut to take the four legs of the stretcher; these slots make sure that the patient is well down on the petrol tins and that the stretcher is always in the right position.

It is essential that there should be a good supply of hot blankets; it is futile to put a patient into cold blankets, and it is not possible to heat up enough blankets after the "alert" has sounded. There must be a cupboard heated by hot-water pipes in which blankets can be kept always warm. That is the first requirement. When the "alert" sounds the warm blankets can be made hot by putting hot-water bottles among them. More blankets can be heated by putting a pile on the hot petrol tins, with an electrically heated cradle over them—so long as the current lasts. If the current goes off the patient, wrapped in hot blankets and lying on five petrol tins filled with boiling water, is surrounded by rubber hot-water bottles. The patient requires careful watching to see that he does not get too hot. A small electric fan to play on to the patient's face is a very pleasant (and perhaps valuable) extra.—I am, etc.,

Wetherby, Oct. 24. R. L. KITCHING.

Organization of E.N.T. Department in E.M.S.

SIR,—I fully endorse the article by Mr. V. E. Negus (October 11, p. 519) and the letter by Mr. Somerville Hastings (October 25, p. 594), which call attention to a weakness in the emergency hospital services. There is, I am fully aware, a keen desire on the part of the Director-General and those working under him to secure the maximum efficiency in these services, and yet in the ear, nose, and throat departments of these hospitals beds are wasted daily, and Service men remain in hospital for weeks on end with inadequate treatment. I do not feel that the administration have yet fully appreciated these facts, but I seem to detect a dawning interest in the matter. May it bear fruit.

There are a number of efficient surgeons available, but the instruments provided are unsuitable and inadequate, while those required in the wards for dressings are almost unobtainable. There is a grave shortage of nurses trained in E.N.T. work who are capable of doing dressings under illumination and can see what they are doing.

May I make the following suggestions? Operative work should be concentrated in one or more E.N.T. centres in each region. In these centres a full modern set of operative instruments should be supplied, all surgeons in the Region should be allowed to operate there, and all cases, save those unable to be moved, should be concentrated there for operation. We should then no longer hear of an E.N.T. surgeon being dispatched thirty miles to an outlying hospital to perform one tonsillectomy.

Further, the present system, adopted under advice, of supplying a fixed, restricted set of operative instruments, many of which are archaic, to any hospital where an E.N.T. surgeon is working is uneconomic. I advocate a full set of E.N.T. instruments to the centres and no operative instruments to individual hospitals. If any operation had to take place elsewhere it would be open to the surgeon to borrow from the centre or to take his own. It is obviously impossible to supply a full set to every hospital, and anything less is useless.

I consider the position of treatment in the wards to be most unsatisfactory, and it is here that time, and therefore money, are badly lost. In every modern throat department there is a treatment room equipped with illumination, sterilizers, and instruments for diagnosis and treatment. There is an urgent need for the provision of such facilities in greater or less degree in every E.M.S. hospital. If the treatment room is efficient and under the care of a keen and properly trained sister, the number of cases requiring operation will be greatly reduced. I should like instruments for diagnosis and treatment, which are relatively few in number and inexpensive, supplied to every E.M.S. hospital at which an E.N.T. surgeon attends, and these should be solely allocated for use in the wards.

There is too little effective treatment and too much operative work; an operation is only justified under war conditions if it will enable the patient to return to his unit a reasonably fit man. Too often his stay in hospital after operation is terminated by his being boarded out of the Army.—I am, etc.,

Edgbaston, Oct. 28. MUSGRAVE WOODMAN.

Possibility of Malaria in Britain

SIR,—Though there is evidence that cases of indigenous malaria may have occurred in this country sporadically until fairly recent years, no malarial outbreak of importance of either indigenous or foreign origin has been reported since that of 1917-18, when 330 civil and military cases of benign tertian were contracted following the return of groups of malaria-infected soldiers from the Near East. Conditions in some parts of our country at the present time are, in respect of the epidemiology of this disease, not unlike those which preceded the 1917 epidemic (Reports to the Local Government Board[1 2]). When there is close association between the malaria carrier, the anopheline mosquito, and the susceptible individual there is reason to expect new cases of the disease. If, as could happen reasonably enough in a country where malaria is almost unknown, these first new cases were missed or insufficiently treated, there would be a rise in the endemic index of that area, with, it need hardly be said, possible serious results. The object of this letter is to draw the attention of general practitioners and Service medical officers in potential malarious districts to the fact that cases of malaria among men who have never been abroad are more likely to arise now than at any time since the close of the last war.

Of the three main links in the chain of malarial propagation two are perennially present in Britain—namely, the potential malaria-carrying anopheline mosquito and the susceptible individual; while the exigencies of war have intervened to provide the missing link, the malaria carrier, on the absence of which our insular freedom from the ravages of malaria has principally, though not wholly, depended. With regard to the malaria carrier, it is common knowledge that there are many thousands of men in this country at the present time who have fairly recently come from Eastern European and Southern European countries where malaria is endemic or from tropical and sub-tropical parts of the Empire. Many of these men have undoubtedly suffered from malaria, and a number will continue to be subject to recurring attacks and carry gametocytes in the peripheral blood from time to time. Though lacking concrete evidence on the proportion of men who come into either of the above categories, yet the known facts relating to the course of this disease justify the assumption that some of them may harbour infection.

Anopheles maculipennis is not only the most numerous and widely distributed species of the three British anophelines which are known to be capable of transmitting malaria, but is, because

of its habits, the most likely to be incriminated. Work by the Continental entomologists, Hacket, Martini, and Missiroli,[3] has shed light on the previously obscure problem of the high incidence of malaria in some districts in northern latitudes and the comparative freedom of others, though *A. maculipennis* was present in both. The problem was elucidated by the demonstration of several varieties of *A. maculipennis*, two of which, with widely differing habits, have since been identified in Britain (Marshall[4]). This discovery is of peculiar importance in connexion with the spread of malaria in temperate climates, and, further, it explains certain perplexing features of the 1917-18 outbreak. The two British varieties are *atroparvus* and *messeae*. The former breeds in coastal brackish waters. It is only partially hibernating and seeks blood meals throughout the winter in the warm ill-lighted buildings which it frequents. The latter is found mainly in inland districts and passes through a stage of complete hibernation, before which it bites voraciously to build up the fat body. If at this juncture it becomes infected it can continue infected throughout hibernation and transmit sporozoites when it seeks a pre-oviposition blood meal the succeeding spring. Fortunately, if animals can be obtained it does not readily attack human beings. In the case of *atroparvus*, on the other hand, conveyance of infection to individuals may continue throughout the winter, not only because the insect remains active, but because "the parasite may develop in mosquitoes which live in heated houses even in places as far north as Archangel, and so the disease may be conveyed in the coldest weather." (Rogers and Megaw.[5])

It is clear that, given a number of malaria carriers and a close association between them and the female mosquito such as is possible in the Nissen huts in which soldiers are housed and in which a warm humid atmosphere is maintained, conditions are thereby provided which are favourable to the infection of the anophelines and to the transmission of the parasite to simultaneous or subsequent non-infected occupants. The *atroparvus* variety is obviously the more dangerous of the two, and particular care should be exercised in coastal and estuarine districts if soldiers from malarious parts abroad are stationed there. *Messeae*, however, should not be overlooked, and in that connexion it is worthy of note that I have recently identified females of *Anopheles maculipennis* in the vicinity of a camp in which Indian troops are quartered.—I am, etc.,

I. F. MACKENZIE,
Deputy County Medical Officer.

Hereford, Oct. 23.

REFERENCES

1 Reports to the Local Government Board (1918). Civil Cases of Malaria contracted in England in 1917. New Series 119. H.M.S.O., London.
2 Reports to the Local Government Board (1919). Reports and Papers on Malaria contracted in England in 1918. New Series 123. H.M.S.O., London.
3 Hacket, L. W., Martini, E., and Missiroli, A. (1932). *Amer. J. Hyg.*, **16**, 143.
4 Marshall, J. F. (1938). *The British Mosquitoes*, p. 118, London.
5 Rogers, L., and Megaw, J. W. D. (1930). *Tropical Medicine*, p. 7, London.

Practical Results of Diphtheria Immunization

SIR,—What immunization can accomplish in combating diphtheria is shown by the remarkable drop in incidence in Brisbane. The local authority of Brisbane, the city under review, has an area of 375 square miles and a population of 335,520. In January, 1938, I decided to make every effort to speed up the council's free immunization service. I used every available means to impress upon parents the importance of having their children—especially their children of pre-school age—immunized. The response exceeded my most sanguine expectations.

In the three years and seven months period—namely, from January, 1938, to July 31, 1941—I have fully immunized 22,912 children. This rate of immunization in Brisbane, which is averaging approximately 6,400 per annum, is, in the period under review, considerably in excess of the birth rate. To this must be added an unknown but considerable number of children immunized by private practitioners, and I am pleased to be able to state that as I write the response of children is greater than ever. Records disclose that at least 70% of this total are children of pre-school age. By educative methods the stage has now been reached in Brisbane when the vast majority of parents realize that they owe this simple duty to their children.

The maximum incidence of the disease occurs during the second, third, and fourth years of life, and as large numbers of immunized children of this age group are appearing every day in increasing numbers in Brisbane, the incidence of the disease now shows the anticipated spectacular fall. Here are the figures for this period:

Population and Diphtheria Cases

	1938	1939	1940	1941 (7 months)
Population ..	325,890	326,000	333,560	335,520
Cases	459	505	231	156

Diphtheria in recent months has reached epidemic proportions in some cities, but Brisbane, which now has 75% of its susceptible child population immunized, is safe from such an eventuality, and with parents co-operating so whole-heartedly with the council's department of health in its sincere attempt to eradicate this serious disease from their midst, a diphtheria-free Brisbane is not far distant.—I am, etc.,

RALPH WEAVER,
Medical Officer of Health.

Brisbane, Queensland, Aug. 8.

Increase in Tuberculosis

SIR,—Houghton, in his paper on the blood picture in tuberculosis (*Tubercle*, November, 1935), quotes the work of Murphy, Sturm, and Ellis, who found that they were able to increase resistance against experimental tuberculosis in mice by artificially increasing the number of lymphocytes by means of splenectomy, or, more especially, heat. Conversely, mice exposed to *x* rays in sufficient dosage to produce atrophy of lymphoid tissue were found to become more susceptible than normal to tuberculosis. Also, Taylor (*J. exp. Med.*, 1919, **29**, 41) showed that a relative and absolute lymphocytosis occurred in the majority of persons he examined before and after a course of heliotherapy during the summer months. These observations are supported by clinical evidence that healing in tuberculosis is associated with increase of lymphocytes in the circulation, and that failure of resistance is associated with lymphopenia. I have published (*Journal*, November 16, 1940, p. 660, and January 11, 1941, p. 65) clinical observations purporting to show that the lymphatic glands act as a barrier against haematogenous tuberculous infections. Therefore any factors tending to produce lymphocyte leucopenia would lower resistance to tuberculosis. Vitamin-B deficiency is such a factor (Sampson Wright, *Applied Physiology*, 1937). Associated also with vitamin-B deficiency is impairment of absorption of fat from the small intestine. This in turn would favour deficiency in the absorption of vitamin A.

Thus another argument, if another were necessary, can be produced for the consumption of wholemeal bread, which has been recommended by the Government. Also, if it is true that heat and light promote lymphocytosis, confirmation is found for the value of heliotherapy in the treatment of non-pulmonary tuberculous lesions, and an argument is constituted for the use of light-treatment centres by the public during the months when black-out conditions are at their worst. Heat in the form of infra-red rays, as well as ultra-violet light, should be applied at such centres, and this work would be done more safely if it was brought within the purview of the tuberculosis officer.—I am, etc.,

M. C. WILKINSON, M.B., B.S.

Braintree, Essex, Oct. 29.

Treatment of Scabies

SIR,—Scabies may be attacked from two aspects: that of the dermatologist, who looks for a cessation of clinical symptoms, and that of the entomologist, who sets out primarily to exterminate the parasite which causes the disease. I consider that dermatologists and entomologists must work in collaboration (and any results that I as an entomologist have been able to obtain are in a great measure due to help and advice freely given by dermatologists); but surely the first thing we must ensure is that our treatment is really killing the sarcoptes in all its stages—that is, the problem should first be attacked from the entomological aspect. Then if (as is the case) it is found that the parasitic infection can be exterminated without a cessation of all clinical symptoms, the dermatologist must carry on from that point. But to try, in the first instance, to cure the symptoms while ignoring the parasite which causes the disease is surely to put the cart before the horse.

The question of whether or not it is always necessary to find living or dead acari has become somewhat confused. Where the treatment of scabies is part of a research programme, then

the worker must surely be expected to be able to demonstrate exactly what his treatment is doing to the parasite. It is because research workers have been so unfamiliar with sarcoptes that so many conflicting results regarding treatment have appeared. It should be possible for the practical man who has to treat the disease to follow the directions of the research worker with the certainty that the disease will be cured at any time or in a known proportion of cases. The ability of the research worker always to find the parasite should save the practical man from this trouble, but the practical man must refrain from calling his results "research" and publishing them for the confusion of others.

New methods have at times been advocated as a result of experiments using far too few cases as well as on insufficient evidence. It is at present premature for me to describe most of my work on this point, but I believe that no new method should be advocated unless it can be shown that in at least fifty cases it has exterminated every parasite and has eventually put an end to the clinical symptoms. I may state that I have found mites alive after treatment of the patient at reputable centres with many different methods, including benzyl benzoate.

While it is difficult to produce evidence to show that a new method is entirely successful, it is much easier to show that an unsatisfactory method is likely to be unsuccessful, for if 100% failure to cure is obtained in even a small number of cases it is obvious that it is hardly worth while continuing its use. This point may perhaps be illustrated by reference to the use of sulphur taken internally as advocated by H. M. Berncastle.[1] The following experiments were made. (1) Two infected volunteers were each fed rather more than 10 grammes of sulphur daily for ten days. This had a slightly purgative effect at the beginning, but the men soon recovered. At the end of ten days both men were more heavily infected than at the start—that is, it was possible to observe a larger number of parasites on their bodies and all stages of the mites appeared to be entirely unaffected. (2) Three uninfected volunteers ate 10 grammes of sulphur daily for seven days. They were then experimentally infected with sarcoptes and continued to eat sulphur for three more days. Biopsies made on the tenth day showed that the mites had burrowed normally and had also laid eggs which were developing in a normal manner. These experiments seem to be sufficient to indicate that this method cannot have a universal application.

Finally, I should like to make a protest. Certain people have accused me of writing, and your *Journal* of publishing, a statement that scabies is "a venereal disease." Reference to my article[2] will show that I state that I believe the disease to be "normally transmitted by personal contact either of a slight or of a venereal nature." I still hold that view, but to say that it implies a belief that scabies is "a venereal disease" is surely a gross misrepresentation. Non-venereal transmission by personal contact, particularly among children, is probably much more frequent than venereal transmission, but among young adult males in the Army venereal transmission, though very far from universal, appears to account for a certain proportion of the cases.—I am, etc.,

Sorby Research Institute, Sheffield, Oct. 23. KENNETH MELLANBY.

SIR,—I was particularly interested in the article by Dr. Dorothy L. Carter (September 20, p. 401), because since March I have been treating cases of scabies in one of the Colchester first-aid posts with a sulphur shampoo. The treatment consists of the usual bath and scrubbing, but afterwards the patient is thoroughly shampooed all over with a shaving brush with a shampoo of the following composition: sulphur praecip., 30 grains; glycerin, 4 minims; soap spirit, 120 minims; aq. rosae, ad 1 oz. A well-known firm of chemists makes this shampoo for me at a cost of 2s. 6d. for a 40-oz. bottle, and approximately 1 oz. of the lotion is needed for one treatment of an adult and 1/2 oz. is sufficient for most children. Each patient is given two treatments on consecutive days.

From March 29, 1941, to September 30, 1941, 116 persons have been given this treatment. The result has been that within a fortnight six persons have returned for further treatment owing to the recurrence of itching. It appears to me that a fortnight is a reasonable limit to set. After a fortnight fourteen persons have returned. The majority of these were undoubtedly reinfections, as they returned months after the first treatment.

The sulphur shampoo is allowed to dry on the patient and he puts clean clothes on over the shampoo when dry. There has been no trouble from sulphur dermatitis even with quite tiny children. The usual disinfection of bedding and clothing is carried out for each case. I am inclined to think that this method is probably simpler and cheaper than any other so far suggested, but the important factor, as in all other methods, is thorough treatment by trained personnel.—I am, etc.,

Health Department, Colchester, Oct. 25. W. F. CORFIELD.

[1] *British Medical Journal*, October 18, 1941, p. 560.
[2] Ibid., September 20, 1941, p. 405.

Diabetes and Chronic Nephritis

SIR,—I should be glad to know if any of your readers have had experience with the action of mersalyl in the treatment of diabetes mellitus. I am sending particulars of a case, which has recently been under my care, in which the use of mersalyl has had a decidedly beneficial effect. I should be glad to hear if anyone can throw a light on what its action is.

The patient is a woman aged 66 suffering from diabetes mellitus and chronic nephritis. She was on insulin soluble 45 units each evening, and zinc-protamine-insulin 45 units with insulin soluble 25 units each morning. In spite of this dosage her urine always gave an orange reaction to Benedict's test. She had increasing ascites and oedema of the face and legs, and did not respond to diuretin, urea, or cardophyllin. After a microscopical examination of her urine, which showed only a few epithelial cells and a few hyaline casts, I decided to give her an intramuscular injection of mersalyl (1 c.cm. diluted to 10 c.cm. with sterile water). One hour before this injection she was given ammonium chloride 30 grains in 1/2 oz. water. Her fasting blood sugar before the injection was 0.332%, and a specimen of urine was taken and gave an orange reaction to Benedict's test and contained albumin +++.

Five hours after the injection a further specimen of urine was tested, and no sugar or albumin was found to be present. Insulin was stopped and the urine was sugar-free for the next forty-eight hours. The patient's general condition showed a remarkable improvement; the oedema diminished, and the output of urine was doubled during the following week; it rose to 58 oz. during the twenty-four hours immediately following the injection. At the end of forty-eight hours the fasting blood sugar had fallen to 0.266%. Three days after the mersalyl the urine again gave an orange reaction to Benedict's test, and although the original doses of insulin were resumed the reaction remained orange. A second injection was given eight days after the first, with a resultant output of 92 oz. of urine in the following twenty-four hours. A specimen of urine after this second injection gave a green reaction to Benedict's test, and further tests have also given a green reaction.

Now (nine days after the second injection) the improvement in the patient's general condition has been maintained: she feels, as she says, "a new woman."—I am, etc.,

London, N.21, Oct. 17. TADEUSZ MARKOWICZ.

Treatment of Varicose Veins

SIR,—Mr. R. T. Payne's exhaustive article on varicose veins (October 18, p. 533) contains some remarkable statements. He tells us that "minimal" operations—i.e., "ligation at the saphenous opening and possibly at one other site"—"even when combined with subsequent injections, rarely lead to complete obliteration"; that "in a case of average severity . . . operation has to be carried out at five or six sites"; that "a mass of tortuous veins . . . calls for free excision," while certain other cases demand "a more extensive excision." And, finally, that "care is needed in planning incisions," and "there is nothing to suggest that surgery should be maximal." "By the twelfth to the fourteenth day," it is gratifying to note, the patient "should be able to walk short distances." But is this "sub-maximal" assault really justified? Can satisfactory obliteration only be achieved by totalitarian methods?

The simple method of ligation at the groin, with a single injection of ethamolin at the time, preferably down an intravenous catheter, has given entirely satisfactory results, both in peacetime and under the severer conditions of war. The patients can travel within eight to ten days; and they do not require "daily injections" four weeks after operation.

"Care is needed," undoubtedly; but it should perhaps be exercised before announcing that such reliable "minimal operations should be avoided."—I am, etc.,

Oct. 24. C. R. MCLAUGHLIN.

Status of the Ship Surgeon

SIR,—Will you allow me somewhat belatedly to refer to some points raised by Dr. James Prendergast (June 14, p. 904) in his letter on the above subject, which I have been unable to read until now owing to absence at sea.

With regard to the objectionable "Voyage Regulations," it seems a pity that those who were responsible for drawing up these did not follow the good example set by the U.S. authorities to meet similar conditions in the last war. At that time those of us who were ship surgeons on vessels carrying American troops were given recognition by the U.S. Government as well as a certain remuneration, in return for which we were asked to advise and guide the military medical officers in their ship-board duties.

In practice things usually work out better than might be expected from a study of the regulations. Actually these can be traversed by the master of the ship, who is responsible for the safety of his crew and ship, and he can ask the ship surgeon to carry out any duties he considers necessary for this purpose, even when this involves the examination of soldiers who may be suspected to be suffering from a serious infectious illness. Such an examination is, of course, carried out in conjunction with the S.M.O., and up to the present I have found the military medical officers only too willing to co-operate for the comfort and well-being of all those on board. On several occasions I have been asked by the S.M.O. to operate on soldiers suffering from appendicitis or to assist him while he operated, and in turn the S.M.O. has always been glad to give an anaesthetic when I found it necessary to operate on one of the crew. When, as a result of enemy action at sea, we had a fairly large number of casualties, the military medical staff and the ship's medical staff worked as a unit. This, of course, is no excuse for the regulations referred to, and Dr. Prendergast has done well to draw attention to them.

In the course of nearly thirty years of service at sea I have never been able to take the view that the duties of looking after the crew were trifling, and I have on more than one occasion known disastrous results happen owing to that view having been taken. Still, I think Dr. Prendergast merely wishes to say that he would like to feel he was doing more. As to the dullness when work is not plentiful, I am afraid nothing much can be done about it. One of the attractions of a medical career at sea is that it provides one of the few escapes for the doctor of a studious turn of mind who is willing to sacrifice a certain amount of financial remuneration for the leisure that will allow him to prosecute his studies, whether scientific or cultural, and at the same time enable him to make up in the quality of his work what it lacks in quantity. I hope this opportunity will long remain open to members of the profession, though I should be the last to deprecate an increase in remuneration.

It is regrettable, I think, that this opportunity is not more widely utilized by men of the required temperament and mental qualities. Our profession would be all the better for being leavened by members who had the time and the inclination to make a serious study of subjects outside the range of ordinary medical or surgical work. Some time ago I read a correspondence conducted on something like equal terms between a leading mathematician of this country and a doctor. The latter was thanked for having pointed out an error in the published work of the former, the work in question dealing with one of the most recent developments in mathematical theory. The doctor, a former ship surgeon, had acquired his mathematical equipment in the intervals between seeing patients at sea. One could cite other instances in support of the view that a ship surgeon's recompense is not to be measured entirely by financial standards. This is not to be construed as a plea in favour of cheap labour or its equivalent in medical practice.

As to status on board, without belittling the necessity at times for extraneous aids, it can hardly be denied that an important part of this status is created by the ship surgeon himself and carried with him from ship to ship.—I am, etc.,

Oct. 25. A. GARDNER, M.B.

Science and World Order

SIR,—I refer to Dr. A. P. Cawadias's letter (October 25, p. 592) dealing with the British Association's conference on the above subject, in which he states that the conference was not international, that no place was made for foreign delegates, and that on the whole few Allied and foreign scientists participated. The facts are as follows. Of the chairmen of sessions four were foreign representatives and two British. Out of sixty speakers, apart from chairmen, twenty-six were British scientists or technicians; twenty-seven were foreign scientists (either working now as such or formerly having done so), of whom ten were nominees of foreign Governments or institutions now in this country; six were British statesmen or Government servants; one was a writer.

If this conference, the first attempt of its kind, leads to more precise discussion of particular questions at subsequent meetings, whether of the British Association or other bodies, one of its principal objects will have been achieved. A committee of the Division for the Social and International Relations of Science is now inquiring into every concrete proposal made at the conference, endeavouring to inform itself, in respect of each, of what action, if any, is being taken now, or of what should be done, by whom, and how. The extremely important questions of starvation and epidemics referred to by Dr. Cawadias and by at least four speakers at the conference (not one only, as he states) are among these.—I am, etc.,

O. J. R. HOWARTH,
London, W.1, Oct. 28. Secretary, British Association.

Mobile First-aid Posts

SIR,—Dr. C. Grantham-Hill (October 25, p. 594) has stated the textbook conditions under which a mobile unit would go into action. In actual practice there are rarely sufficient casualties in a very restricted area in a town (with hospital near) to warrant setting up a mobile post. So if these conditions were adhered to doctors of mobile units would not often be called upon.

Our experience has indicated that wherever there are a few casualties a mobile unit doctor should go with one or more of his personnel in a car carrying packs of dressings, etc., a doctor's emergency bag, and a few long splints inside, and, in the boot, A.T.S., blankets, hot-water bottles, vacuum flasks of hot water and beef extract, all the latter for that highly dangerous condition, shock. The doctor then goes from "house to house." (Elastoplast dressing-strips are not an official issue, but they save a lot of time!) But if a mobile van has to turn out, I would suggest that it should contain two table-tops (with trestles) on which to lay out dressings, etc., and from which to work. For speed in laying out, all the dressings needed for these tables can be stored conveniently in the top divisions of the A2 box.

Dr. Grantham-Hill's well-equipped van for washing and treating patients is doubtless very useful for rural districts far from hospitals, but in the towns our chief aim is to rush patients to hospital with the maximum speed, where the wounds are cleansed, etc. Incidentally, the dirt is so embedded that it would be impossible for the mobile doctor to get it out.

Finally, mobile unit doctors should make it a duty to spend an hour every month or so with the heads of report centres, discussing matters of common interest. It is amazingly helpful to both parties.—I am, etc.,

MAURICE E. J. PACKER,
Oct. 25. M.O. in Charge, No. 1 Mobile Unit, Clifton, Bristol.

SIR,—Your correspondent Dr. Grantham-Hill might be interested to know that in the town where I live we have three mobile units built on the lines he describes. They are converted buses, originally designed to carry about 30 people. I believe we are indebted to our medical officer of health for the idea. Such a unit certainly does relieve one of the anxiety of finding suitable premises for working in during a raid. My unit is roomy, well lighted, with operating table, sterilizer, and large water-tanks (these last on the roof). So far my unit has been in use during one (our chief) raid, and, with all modesty possible, I think we were well worth our keep. There is one

point which we found needed altering: a portable light-trap is essential; work cannot be carried on when, every time the door is opened, workers are thrown into darkness inside.

I gather that Dr. Grantham-Hill has had his unit frowned on officially. I, too, detect a certain chilliness in the atmosphere whenever a mobile unit is mentioned, and I am sure our reception would be more cordial if the original Government idea were modified on the lines Dr. Grantham-Hill indicates. In the eventual merger of A.R.P. and Home Guard medical services (surely a very likely merger in a long war), our travelling units may, I feel, earn the gratitude and admiration of the Ministries concerned.—I am, etc.,

Doncaster, Oct. 28. ROBT. W. L. WARD.

First Aid to the Injured

SIR,—I have read with interest Dr. J. C. Hodgson's letter on "First Aid to the Injured" (October 25, p. 595), in which he suggests that simplicity, flexibility, and improvisation are required in wartime, and considers that a special pamphlet on "First Aid in Time of War" should be published. Is this really necessary? At the time of a heavy air raid these characteristics are certainly required; nothing but simple methods can be used in removing casualties from burning and falling buildings, usually at night, such methods being the steadying and supporting of fractured limbs by bandages, applying tourniquets for severe haemorrhage, and trying to keep the casualty warm. After that the personnel of the post or point will deal with the cases in a deliberate and orthodox manner. All posts and points have a medical man in charge, I believe, or obtainable at call, and he will supervise the best treatment available until the cases are removed by ambulance.

Dr. Hodgson remarks that the tourniquet is not foolproof; I quite agree, but it is more important and often much more urgently required in wartime than in peacetime. It should be of the simple rubber-band type, easily made from the inner tube of a motor-car tyre cut on the spiral.

In my opinion too much has been made of this so-called "wartime first aid"; it is practically all in the 1940 edition of the "Red Cross Manual," although certain things require stressing in lectures.—I am, etc.,

HOWARD M. STRATFORD, F.R.C.S.Ed.

Beckley, East Sussex, Oct. 25.

SIR,—The letter under this title from Dr. John C. Hodgson merits a reply. In my opinion Dr. Hodgson is confusing the issue between "first aid to the injured" and "the after-care of the injured," as he postulates an interval of days between the injury and professional attention. If this is to be so "during a period of invasion, especially in rural areas," then obviously it follows logically that the scope of training should be increased to cover such an eventuality, and I have been asked many times by my own personnel since the war to widen and deepen the training for this very reason.

It is my experience over a great number of years that first aid and casualty work appeal to a very small percentage of the population, and that those who do take it up do so seriously and become experts in their own particular subject and are very keen to add to their knowledge. It takes years to make a really efficient "first-aider," and it is quite useless to expect to produce an efficient casualty service by giving short courses on first aid to the general public. I have done so and I know the result—a smattering of ill-digested knowledge soon forgotten.

In my opinion a grave mistake has been made in not taking over every St. John Ambulance Division *en bloc* as a working casualty unit and reserving each member for that work. The result of not doing so in my own Division, where we have men, nurses, cadets, and a motor ambulance, is deplorable. Many of our fully trained members have been taken into services totally unconnected with casualty work, and thus all their training virtually wasted, while the few remaining struggle to keep the service going in a rural area liable to invasion.

At the present time there is much confusion in the civilian casualty service between mobile units, first-aid posts and points overlapping the work of the St. John and Red Cross. I would suggest: (1) That the St. John Ambulance Divisions be placed on a war footing and made responsible for all casualty services in their own district; to organize such services without any interference from any source. (2) That adequate medical supplies be forthcoming to each unit without delay. (3) That each Division should act as a centre for the training of the public and services in emergency first aid, and at the same time give more extended training to those interested or responsible for any post where casualties may have to remain for any length of time.—I am, etc.,

RUPERT PALMER,
Divisional Surgeon, St. John Ambulance, Lydd Division.

Oct. 26.

A National Health Policy

SIR,—More persons of higher income may become insured; a higher capitation fee may be granted. These actions may injure or benefit the profession, may ensure that illness is promptly treated and its duration shortened, but they will do nothing to reduce the onset of illness. A State Medical Service might be a benefit or a curse, but it, again, would not reduce the sickness incidence in the population. Neither the profession nor the public is at present in a position to deal adequately with such a radical change in the organization of its medical services. This is a debatable matter, and a large proportion of the medical profession is at present absorbed in the Services and unable to attend to a matter which will be vital both to them and to the public.

There is, however, a matter of greater importance to the public and the profession, which has scientific evidence and practical experience in support of its worth, which could and should be put in the front line of defence now and remain in the front line of maintenance in our post-war economy. I refer to the "Medical Testament" of the Cheshire Panel Committee. This practical demonstration of better health for the nation should be made a national policy. It has the support of Sir Albert Howard as an agriculturist, whose work won world-wide acknowledgment; and of Sir Robert McCarrison, an authority on dietetics second to none. Its practical application as a national policy would: (1) Reduce sickness by prevention, which is better than cure. (2) Increase the well-being of the whole population. (3) Reduce the hours lost to productive work and so increase our productive capacity. (4) Increase the quantity and quality of home-produced food to the maximum. (5) Reduce the drain on the country due to cost of medicines and sick pay. (6) Reduce the amount of work to be done by each practitioner without altering his panel, which is the equivalent of a higher capitation fee but without cost to the State. (7) Put agriculture on its feet and keep it there, with adequate wages and return on capital and with increased fertility and production from the soil. (8) Give a higher standard of health and living without an increase in the cost of living.

Probably many will say that all this is impossible. Let them read and think about the "Medical Testament" and the speeches made by Sir Albert Howard and Sir Robert McCarrison in support of that testament, and read, in addition, the former's *Testament of Agriculture*. They will then find that the way is there; we have only to make up the will.—I am, etc.,

Market Rasen, Oct. 26. DUDLEY F. TORRENS.

The American Association for the Study of Goiter again offers the Van Meter Prize of three hundred dollars and two honourable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The award will be made at the annual meeting of the Association, to be held at Atlanta on June 1, 2, and 3, 1942, providing essays of sufficient merit are presented. The competing essays may cover either clinical or research investigations; should not exceed three thousand words in length; must be presented in English, and a typewritten, double-spaced copy sent to the Corresponding Secretary, Dr. T. C. Davison, 478, Peachtree Street, Atlanta, Georgia, not later than April 1. Dr. Asher Chapman of Rochester, Minnesota, has received the award for the year 1941 in recognition of his essay entitled "The Relationship of the Thyroid and the Pituitary Glands to Iodine Metabolism and Extrathyroid Iodine Metabolism."

Obituary

The death at the age of 92 of Dr. NATHANIEL BENOLY, for over sixty years a member of the B.M.A., has removed a figure at once venerable and much beloved. His medical activity did not cease till July, 1939, when he had reached the age of 89. Even at so advanced an age he still retained extraordinary energy of mind, body, and spirit, literally looked and felt twenty years younger than he was, and rejected with scorn any suggestion of a well-deserved retirement. The secret of his devotion to his work was the love of a man for his fellow men, and in the East End of London, where he was in general practice during the latter half of his life, he will remain unforgotten by many. For not only was he a doctor of outstanding ability, whose diagnosis was remarkable and whose treatment was based on methods founded on long experience and unexaggerated application of modern therapy, he was also the friend of his patients, the cheerful, often witty counsellor; there must be many a man, and woman and child, too, to whom contact with "the old Doctor" meant a new and more hopeful beginning of life, both physically and spiritually. In his younger years he had travelled considerably in European countries and in South America, and, his memories going back further in time than the memories of most, his conversation was often enthralling. He lived in retirement from the beginning of the present war, but except for the last few months, when his health declined, he retained his lucidity of mind, his gay serenity of spirit, and his love of books and men.

G. R. B.

The passing of R. M. LITTLER, F.R.C.S., severs a link with Whitehead, Japp Sinclair, and others who made the Manchester School famous. To both Mr. Walter Whitehead and Sir W. Japp Sinclair he had been house-surgeon. Coming to Southport over forty years ago, Littler was the first secretary of the Southport Medical Society, serving in that capacity for several years and later becoming president. In 1912 he was chairman of the Southport Division of the B.M.A., of which he had been a member for forty-six years. In 1905 he joined the honorary staff of the Southport Infirmary, and from 1924 to 1925 was chairman of the Medical Board. Retiring under the age limit he was appointed honorary consulting surgeon. Cultivating his garden in the broadest sense he found a corner in it for music and a very special one for horticulture. Unfortunately the years of retirement were marred by indifferent health. Of broad view and sound judgment, although at times a little mistrustful of his own ability, Littler's advice and help were often sought by and given to his medical friends, whose respect and affection he had in more than full measure.

W. A. M.

We regret to record the death of Dr. FERGUS MACANDREW DAVIDSON on October 9 at his home in Arbroath at the early age of 52. Born in Aberdeen, he was educated at Ashley School, Robert Gordon's College, and Aberdeen University, from which he graduated M.B., Ch.B. in 1914. He went to Arbroath in 1919, where his kindly and gentle presence soon endeared him to friends and patients alike. He was on the staff of Arbroath Infirmary, where he took a great interest in the electrical department. He was also medical officer for the parish over a long period of years. Dr. Davidson was untiring in his work among his patients, never sparing himself, and this took a heavy toll of his strength. He will be missed in many homes, and the memory he leaves behind him will be a fragrant one and that of a very gallant gentleman. In his infrequent spells of leisure his hobbies were art and philately. A member of the B.M.A. for well over twenty years, he is survived by his wife and by his daughter, who is also a member of the profession.

Dr. GEORGE ALEXANDER COHEN, who died in hospital at Edgware on October 16 at the age of 71, had been a coroner for more than thirty years. A native of Hull, he studied medicine at the University of Edinburgh, at St. Bartholomew's Hospital, and in Dublin, graduating M.B., C.M.Ed. in 1893. After holding a resident post in London at the National Hospital for Diseases of the Heart he made many voyages as ship surgeon, and returned to London in 1906 to take up general practice at Green Lanes, Harringay. He then became a member of the Middle Temple and read for the Bar, and at the time of his call was awarded the Powell prize in common law and the prize in evidence and legal procedure. In 1910 Dr. Cohen was appointed a part-time coroner, and in 1916 he became full-time coroner for East and Central Middlesex. In his early years he was a keen volunteer, with a commission as captain in the Volunteer Battalion of the Middlesex Regiment; he had also been an instructor and lecturer at the Ambulance School of Instruction. He was a liveryman of one of the City companies and a keen supporter of the Arsenal Football Club.

By the death of Dr. JOHN GILFILLAN RONALD at Torwood Hall, Larbert, on October 22 Stirlingshire loses one of its oldest and best-known medical practitioners, who had been a member of the B.M.A. for nearly half a century. A student of the University of Glasgow, he graduated M.B., C.M. with commendation in 1892, and held a number of important posts during his long period of active work at Larbert. He was an authority on first aid and ambulance work and examined for the British Red Cross Society, which made him an honorary life member. During the last war he served with the rank of captain R.A.M.C.(T.A.), and at the time of his death he was a deputy chairman of the Stirlingshire Medical Recruiting Board, medical officer to the Carron Company, and visiting medical officer at the Camelon Fever Hospital. In 1934 Dr. Ronald was presented with a silver loving cup and a cheque for nearly £300 in gratitude for his medical skill, his devotion to his profession, his sympathy with suffering, and his generosity to the poor.

Dr. JOHN JOSEPH REDFERN, who died in retirement at Compton, near Winchester, on October 23, was born in Belfast in July, 1861, eldest son of the late Prof. Peter Redfern, M.D., of Queen's University. He had a distinguished career as a student in Belfast, winning a gold medal and scholarships in chemistry, anatomy, and physiology, and graduated B.A. with first-class honours in experimental science in 1881, and M.D. and M.Ch. with first-class honours in 1885. After postgraduate study in London, Vienna, and Berlin, Dr. Redfern settled down in practice at Croydon, where he became honorary physician to the Croydon General Hospital and later physician to the War Hospital. He had been a member of the British Medical Association for just over fifty years.

Dr. ALFRED SKIRROW ROBINSON, who was killed by enemy action last month, had been a member of the British Medical Association since 1899 and for some years took a prominent part in the public life of the North Riding of Yorkshire, serving both on the Redcar County Borough Council and on the North Riding County Council. Born at Leeds in January, 1871, he was educated at the Yorkshire College, Leeds, and Emmanuel College, Cambridge, which he entered with an exhibition from the Haberdashers' Company of London. He graduated B.A. in the Natural Sciences Tripos of 1892, qualified as L.S.A. in 1894, and took the Cambridge M.A., M.B., and B.Ch. degrees in 1896. At Leeds he was house-surgeon and resident anaesthetist at the General Infirmary and acted as clinical assistant to Mr. T. Pridgin Teale. Settling in practice at Redcar he became medical officer and public vaccinator for the Kirkleatham District. Dr. Robinson had been medical officer to the 5th Yorkshire V.A.D., and served during the last war with a temporary commission in the R.A.M.C.

E. Verrill and E. A. Lane (*New York St. J. Med.*, 1941, **41**, 1186) record a case in a man, aged 55, who had been a typhoid carrier for the past thirty-six years, during which he did not infect anyone inside or outside his family so far as was known. Removal of the gall-bladder, which contained a gall-stone of unusual size, failed to cure the typhoid carrier condition. There appears to be no previous case on record during the last ten years of the association of the carrier state with an acute exacerbation of chronic cholecystitis.

Medico-Legal

TEMPORARY MENTAL TREATMENT AND DIVORCE

The draftsmen of "Herbert's Act," which so radically altered the law of divorce, could not be expected to foresee all its practical implications. Divorce for insanity was a complete innovation, and on the whole the Act has worked well. One of the most striking gaps in it is, however, the absence of any mention of the "temporary" mental patient. The Act provides that a spouse may have a divorce if he/she can prove that the other party to the marriage is incurably insane and has been continuously under care and treatment for five years before the date of the petition. The patient is deemed to be "under care and treatment" in certain specific circumstances and no others: the words are satisfied if he/she is "detained in pursuance of any order or inquisition under the Lunacy and Mental Treatment Acts, 1890-1930," or under the statutes relating to mental patients in the fighting Services, or as a criminal lunatic. The words are also satisfied if, immediately after a period of such detention, the spouse becomes a voluntary patient and remains so for the rest of the five years, or again comes under detention. The object of this provision is obviously to avoid placing the voluntary status, created by the Mental Treatment Act, 1930, at a disadvantage by making it in any degree a bar to a divorce. Herbert's Act, however, does not say what happens if the patient has during the five years been a temporary patient under Sect. 5 of the 1930 Act.

A Case in Point

The question came before the President this summer[1] when a husband petitioned for a divorce and showed that his wife had been received into a mental hospital for temporary treatment in September, 1933; after the first statutory period of six months her treatment was duly extended for another three months by "directions" of the Board of Control—that is the word used in Sect. 5 of the 1930 Act. At the end of May, 1934, she was discharged relieved, and entered another mental hospital as a voluntary patient. She was still there at the date of the petition, and admittedly incurable. Voluntary treatment only counts for divorce if it follows a period of detention "in pursuance of any order." Was her temporary treatment detention of this kind? The President said that a "direction" is indistinguishable from an "order," and therefore her detention was in pursuance of an order under the 1930 Act. But she had had her temporary treatment extended; he declined to express an opinion on whether, if she had gone straight from her initial period of temporary treatment into voluntary treatment, the result would have been the same. When a temporary patient is received for treatment there is neither order nor direction, only an application and two medical certificates. The law may therefore conceivably be that the original period, unlike the extended period, is not "detention in pursuance of any order." That would be a ridiculous situation, and this point badly needs clearing up in an amending Act.

Desertion and Volition

In another divorce action[2] the question was whether temporary treatment interrupts a period of desertion. Herbert's Act makes desertion for three years a ground for divorce. By settled law, desertion must be wilful, intentional; and in a divorce appeal[3] heard two years ago the Master of the Rolls held that if a deserting spouse is certified under the Lunacy Act, that is irrefutable evidence that he/she could no longer entertain the intention to desert, and the period of desertion was interrupted until the reception order was cancelled by discharge. (This is the only legal situation in which a certified patient is held to be irresponsible merely by reason of the certificate—an anomaly with no basis in reason.) A wife deserted her husband in 1937. Just two years later she was received into a mental hospital as a temporary patient. A week afterwards she became a voluntary patient, and a month after that she was discharged. Mr. Justice Henn Collins was satisfied that she had deserted her husband for the required three years before the date of the petition, if the period of temporary treatment did not in law annul her *animus deserendi*—the wilful element in the desertion. At first sight there appeared to be a strong argument against the petitioner. To qualify for temporary treatment a patient must be incapable of expressing himself as willing or unwilling to receive such treatment—must, in the medical phrase, lose volition. If the wife had no volition concerning her treatment, she might conceivably have been inferred to have none concerning her desertion of her husband. The learned judge, however, declined to infer that in matters other than that of her treatment she had no will, and was incapable of forming an opinion or having an intention. Moreover, as she was not under certificate he felt himself entitled to consider medical evidence of her state of mind, and this testimony satisfied him that during the whole period of her treatment she was capable of forming an opinion that she did not want to go back to her husband. He added, referring to the decision in Williams *v.* Williams, that, untutored by higher authority, he should have said that once a spouse deserted the other, the desertion continued until the deserter did something positive to put an end to it, and that if any question arose, the burden of proving the end of desertion should fall upon the offending spouse, and should not be lifted merely because that spouse happened to become insane. In the light of the judgment of the Court of Appeal, however, he knew better, and he had only described his unenlightened state in order to say how indebted he was to the judges who had corrected him. On grounds of psychiatry and common sense, his former error seems far preferable to the enlightened view laid down by the Court of Appeal.

[1] Benson *v.* Benson (1941), 2 All E.R., 335.
[2] Monckton *v.* Monckton (1941), 2 All E.R., 133.
[3] Williams *v.* Williams (1939), P. 365.

Universities and Colleges

UNIVERSITY OF LONDON

At a meeting of the Senate, held on October 29, the following resolution was unanimously adopted: "That the cordial thanks of the Senate be conveyed to Mr. H. L. Eason for his services to the University during his tenure of the office of Principal and, prior to that, as Vice-Chancellor, as Chairman of the Academic Council, the Finance Committee, and the Library Committee, together with an expression of their best wishes for his happiness in retirement." Mr. Eason retired from the office of Principal on September 30.

UNIVERSITY OF GLASGOW

At a graduation ceremony on October 18 the following medical degrees were conferred:

M.D.—C. H. Wilkie, †‡H. C. McLaren.

M.B., Ch.B.—*J. S. Frew, †T. A. Berry, †N. C. Scott, †J. Gilchrist, †W. A. Maclure, †W. Barr, †A. W. McLeod, †W. B. Newton, †Agnes D. D. Murray, †J. Renwick, F. O. Adewole, A. B. Aiton, W. A. M. Akiyemi, J. M. Alexander, W. H. N. Angus, R. Auld, A. C. Barry, S. G. A. Bartlett, C. K. Boal, A. Bowman, R. D. C. Brackenridge, O. M. Brewster, C. H. Brown, Johanna J. S. Brunton, W. Burnett, W. F. Caldwell, Janet A. Christie, T. Cochrane, H. B. Cowan, G. McN. Cubie, J. T. Cunningham, P. N. Cunningham, T. McM. Curran, C. C. Cuthbert, Jean W. Cuthbert, J. K. M. Deas, W. A. Dewar, T. M. Donald, W. A. J. Donald, P. A. Duke, R. I. S. Dunn, R. L. Ewing, C. S. Farquharson, H. Ferguson, J. Frame, Marion K. Gilmour, B. Guyer, J. A. V. Hamilton, J. M. Hamilton, A. R. Harbinson, J. Hemphill, Ruth L. Henderson, A. T. Hendry, M. J. Hood, J. Isaacs, J. Jacobs, Eileen I. Jamieson, J. S. Jeffrey, G. Johnston, D. M. Kissen, N. McE. Lamont, W. H. Lang, W. R. C. Lang, I. Lumsden, Mary C. Lynas, R. McAndrew, W. F. McClemont, A. F. McCoubrey, W. M. McDermid, A. MacDonald, J. McGlone, R. McIlwraith, Mary K. McKelvie, A. MacKinnon, H. A. Maclachlan, A. G. MacLeod, D. J. MacLeod, J. A. Macleod, N. F. MacLeod, J. C. Meek, I. G. Meiklejohn, E. Millar, Kathleen M. Miller, W. L. Milligan, R. D. Muckart, J. Murphy, J. Newton, G. W. Park, W. A. Parker, J. B. Pettigrew, R. E. Potts, A. R. Rennie, T. R. A. Richmond, D. Robertson, N. Sher, D. W. Short, A. M. Smeaton, A. B. C. Smith, J. F. Smith, F. M. Steel, Janet I. Stewart, Sylvia J. Strachan, T. Symington, A. C. Tait, G. R. Thomson, J. M. Urquhart, A. R. G. Watson, J. C. Wood, F. W. C. Yardumian, W. H. Yellowlees, Maida B. Young, M. J. Young, Violet B. Young.

* With honours. † With commendation. ‡ *In absentia.*

James Shearer Frew gained (*a*) the Brunton Memorial Prize as the most distinguished graduate in medicine of the year

1941; (*b*) the West of Scotland R.A.M.C. Memorial Prize as the candidate with the highest aggregate marks in surgery, medicine, and midwifery in the Final M.B., Ch.B. examinations held during 1941; (*c*) the Macewen Medal in Surgery as the candidate who obtained the highest aggregate marks in surgery in the Final M.B., Ch.B. examinations held during 1941; and (*d*) the Stockman Medal as the candidate who obtained the highest aggregate marks in the professional examinations in materia medica and therapeutics and medicine (written, oral, and clinical), excluding paediatrics, in 1941.

The John W. Weir Prize was awarded to William Alastair Maclure as the candidate who obtained the highest aggregate marks in midwifery and diseases of women in the final degree examinations in medicine held in 1941.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a quarterly comitia of the Royal College of Physicians of London, held on October 30, with Sir Charles Wilson, President, in the chair, Sir Wilson Jameson, Dr. J. C. Spence, and Dr. W. A. Daley were elected Councillors. The following were re-elected representatives of the College: Sir Adolphe Abrahams on the committee of management of the Conjoint Board; Sir Comyns Berkeley on the council of the Central Midwives Board; Dr. John Hay on the court of governors of Liverpool University; and Sir Stanley Woodwark on the Central Council for District Nursing. Dr. C. Elgood was elected a member of the Library Committee.

The President announced that he had invited Sir Wilson Jameson to give the Harveian Oration and Surgeon Captain Macdonald Critchley to give the Bradshaw Lecture, both in 1942; that the College had awarded Linacre Scholarships at the King's School, Canterbury, to T. Stapleton and D. M. D. Evans; and that the Jenks Scholarship had been awarded to T. R. L. Finnegan, late of Epsom College.

The following, having satisfied the Censors' Board, were elected Members:

Margaret D. Baber, M.D.Lond., W. W. Brigden, M.B.Camb., H. A. Burt, M.B.Camb., D. L. Caldwell, M.B.Camb., G. W. M. Findlay, M.D.Ed., G. M. FitzGerald, M.B., G. Flavell, F.R.C.S., G. S. Graveson, M.B., Ursula James, M.B.Lond., J. Marks, M.D.Lond., T. Parkinson, M.D.Lond., F. T. G. Prunty, M.B.Camb., I. B. Sneddon, M.B., Surg. Lieut. R.N.V.R.

Licences

Licences to practise were conferred upon the following 159 candidates (including twenty-one women) who have passed the final examination of the Conjoint Board and have complied with the necessary by-laws:

H. Anderson, R. H. Andrews, I. J. Anrep, C. D. Baker, H. Barrada, E. Barry-Smith, A. W. Bauer, P. Baxter, H. Beck, M. Bednar, C. J. A. Bell, J. A. R. Bickford, Margaret A. Billinghurst, D. A. Blacketer-Simmonds, J. Borrowdale, D. S. Boyle, S. V. Brookes, Jean L. Broughton, R. J. D. Browne, C. J. Bruhn, J. D. Bruzaud, Olive N. Bywaters, D. A. K. Carnegie, D. W. F. Charlton, W. H. Chase, J. P. Childs, N. F. Clarke, B. U. Coffey, H. I. Coombs, R. A. Craig, A. F. Crick, M. C. Cross, F.-X. Darné, R. G. Dewhurst, L. W. D. Drabble, F. M. P. Eckstein, J. R. Ellis, Shifra Ernst, A. T. G. Evans, A. J. Evans, E. J. S. Evans, J. W. G. Evans, J. H. W. Fagan, T. N. Fison, J. M. Fitton, A. W. H. Foxell, Beryl M. Givan, E. C. E. Golden, Gertrude Goldscheider, J. G. Goodhart, A. J. R. Gotfried, J. D. C. Gowans, K. G. Green, B. P. Griffin, H. J. Hagger, C. L. Hall, Doris N. Hall, Constance M. Hallett, J. H. G. Halliday, Penelope K. Hammick, B. E. F. Hammond, P. A. S. Hargrove, C. Harris, R. J. Harvey, T. Haw, Ursula M. Hickman, A. W. Hind, S. J. Hinds, W. K. G. H. L. Hoffmann, A. E. Howarth, D. R. Hughes, Isabella C. F. Hungerford, M. Icht, E. B. Jarrett, R. Jenkins, C. H. Jones, D. G. Jones, K. C. D. Jones, S. Jung, F. L. King-Lewis, F. M. Lancaster, R. Leigh, K. H. Lim, Wai Kwan Lim, J. Lomas, J. D. B. Longley, Helen C. Longmore, M. Lustigman, O. Lustmann, P. M. McAllen, H. McColl, G. Machanik, L. R. McLaren, T. M. M. McLean, H. L. McMullen, G. MacVicar, Mary B. Maish, Betty M. Margetts, G. Mariani, H. E. S. Marshall, S. M. Ma'tuk, C. H. Merry, J. E. Moore, J. E. E. Morgan, P. J. L. Mumford, J. W. Nelson, R. J. Newman, G. D. R. Patten, Jean W. Paul, A. Pearce, B. O. Pepper, R. K. Phillips, W. A. Porter, Elvira Power, T. M. Pritchard, J. P. Quillian, J. F. P. Quinton, R. J. W. Rees, Edith Rhodes, J. W. F. Richardson, H. A. Ripman, J. T. Robinson, W. G. Roper, I. Rosen, C. F. Ross, R. K. Ross, H. Rotenstein, D. T. Rowlands, D. K. Sambrook, W. Schiller, G. C. Schwizer, H. P. Scurlock, C. F. Scurr, A. G. Seaman, J. P. Sharp, A. L. H. Smith, B. J. Smith, A. J. M. Stevenson, M. Szinay, J. H. Tasker, H. D. Teare, D. I. Thomas, R. D. St. G. Tucker, K. O. A. Vickery, D. G. Vulliamy, E. Vure, G. H. Waddington, Glenys J. Wade, Vera B. Walker, G. G. Wallis, D. P. Walther, C. W. Walton, G. N. Weber, Joan M. Whiteman, D. Williams, E. J. Williams, M. H. C. Williams, D. H. Wright, E. J. Young-Thompson.

Diplomas

Diplomas in Child Health were conferred, conjointly with the Royal College of Surgeons of England, upon the eleven candidates whose names were printed in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of October 25 (p. 597). Diplomas in Public Health were conferred, jointly with the Royal College of Surgeons of England, on L. C. Lodha, L. G. Norman, and M. A. G. Ward.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At a quarterly meeting of the council, held on October 25, with the President, Prof. W. Fletcher Shaw, in the chair, changes in the regulations for the Membership, to take effect in January, 1943, were approved.

The following were admitted to the Membership of the College:

G. Boyd, Glasgow, E. Gledhill, Batley, R. MacI. Millen, London, Constance E. Peaker, Leeds, Kathleen M. Robinson, London, Katherine C. Rogers, London, R. X. Sands, London, Violet E. A. Sykes, London, G. Wynn-Williams, London.

The following have satisfied the examiners for the Diploma of the College:

Elizabeth C. W. Barker, London, Constance L. Beynon, Brighton, L. A. Cruttenden, Ripley, Dorothy Cunningham, Preston, R. C. Dennis, R.A.F.V.R., A. A. Fyffe, London, R. P. Gammie, Bishop's Stortford, Jean L. Hallum, Birmingham, L. W. Hefferman, Swansea, G. Hollingsworth, Macclesfield, Hilda E. McNamara, Canada, P. S. Norris, Pembury, Jean F. Thompson, Leeds, H. B. Watson, Birmingham, Eva M. M. Willett, Southampton, H. G. Wolskel, London.

Following the meeting the William Blair-Bell Memorial Lecture was given by Mr. W. C. W. Nixon on "Diet in Pregnancy."

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the final examinations, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., L.R.F.P.&S.G.:

C. E. V. P. Amerasinghe, B. Beck, G. C. Cope, T. V. Darke, T. Dean, A. M. A. El Far, Y. Faraony, R. Friedman, A. R. Gemmell, M. F. El Giziri, D. F. P. Gordon, D. Granet, B. Greenberg, J. H. Haldane, Margaret M. Hanretty, N. Hornstein, Dorothy L. D. Johnston, G. Johnstone, H. E. Klein, R. I. Kynaston, Henrietta Lennon, J. K. Lotinga, B. H. Lunine, H. Macpherson, O. P. Markandya, H. J. F. Mitchell, E. K. Neidich, J. O'Hara, V. Poonoosamy, E. H. Reinsberg, C. B. Robinson, J. Schneiderman, R. Smith, T. Tuller.

The following graduates of recognized foreign universities were also admitted licentiates: S. Riterband, Else Wolfsohn.

The Services

CASUALTIES IN THE MEDICAL SERVICES

Royal Navy

The name of Temporary Surgeon Lieut. ROBERT TAYLOR, R.N.V.R., is included as "Missing, Presumed Killed" in an Admiralty Casualty List published on October 25. He was educated at the University of Glasgow, where he graduated M.B., Ch.B. in 1940. He joined the British Medical Association soon after qualification.

Royal Army Medical Corps

Prisoner of War

War Substantive Captain John Burrowes Sherman.

DEATHS IN THE SERVICES

Major ARTHUR BRODIE HAMILTON BRIDGES, O.B.E., R.A.M.C. (ret.), died at Cheltenham on October 22, after an operation, aged 54. He was born on November 2, 1886, received his medical education at St. Thomas's Hospital, and took the M.R.C.S., L.R.C.P. in 1912. Entering the R.A.M.C. as lieutenant, from the Special Reserve, in 1913, he became captain in 1915, and retired as major in 1933. While on the Reserve of Officers he was employed for a time in London, and was recently residing at Kilmington, Devon. He served during the war of 1914-18, was mentioned in dispatches in 1916, and received the O.B.E.

Medical Notes in Parliament

The General Medical Council (Temporary Provisions) Order, 1941, which extends until December 31, 1942, the term of office of certain direct representatives, was laid before both Houses of Parliament on October 16.

Feeding the Children in Wartime

In the House of Lords on October 21 Lord WOOLTON outlined the general policy of the Government on the whole field of nutrition in so far as it was associated with food. Lord Woolton also referred to Mr. Butler's announcement that day in the House of Commons. He said that we were all now living on a diet mainly influenced by the extent of the domestic ration. This ration was based on the average need of the average family; it was not designed to meet the needs of special classes of the community, and there was a danger that those who required special consideration in the matter of their diet, either for the growth of their bodies or the maintenance of more than average physical strength, might find this diet insufficient. This was particularly the case with children, who needed more than average supplies of the body-building foods.

At present there were 5,000,000 children in the elementary and secondary schools, and only 300,000 of them were receiving meals in school. Small as this number was, it represented 100% increase during the past year. The provision of school meals was also extremely uneven in the country: whereas in a few areas as many as 30% of the children were having meals in school, in others there was little or no provision for them. Financial considerations alone had not impeded the development of the feeding of school children. There had been other factors. There was, of course, the question of getting supplies of food. They could now assure local education authorities that a sufficiency of food would be forthcoming, and they had arranged for priority supplies to enable school canteens to serve balanced meals of the type which the medical and scientific advisers of both the Board of Education and the Ministry of Food considered necessary for securing the growth and maintaining the health of school children. These provisions would apply to all schools.

EMERGENCY FEEDING CENTRES TO BE USED

The Ministry of Food had made emergency arrangements for feeding the people in the event of war conditions making it necessary for there to be a great extension of communal feeding; 170 cooking depots had been set up by local authorities, under the auspices of the Ministry of Food: that number would presently be increased to 250. The depots had already a capacity for providing 300,000 meals a day for school children, and this number would be increased to 400,000 meals. These depots would now be used daily for the children of the nation. There were also other wartime cooking facilities, but local authorities would find it necessary to start new individual or central kitchens. These kitchens would be equipped from a central pool of equipment organized by the Ministry of Food, which was already stocked with many of the necessary items and which would be extended to include articles specially suitable for school purposes.

MILK SUPPLIES

Feeding children in schools, he continued, was but one aspect of the problem of maintaining the nutritional life of the country. They could, by adopting an informed and sensible control of the things that we imported and by continuing to benefit by the great effort the farmers were making to grow the food needed, secure that in spite of a restricted diet there should be no deterioration in the standard of health of the nation and no failure of output through shortages of food. The provision of plentiful supplies of milk for nursing mothers and for children under 5 was a plan that was already working. The Government had recently taken some additional control over the milk supplies. The main purpose had been to ensure that growing children, up to and including 17, should have adequate milk, both at home and at school. That plan was at the present making no call on the forbearance of the country, but as winter proceeded and liquid milk supplies became less it might call for sacrifice on the part of those who were older and who, save in exceptional circumstances for which he had provided, could quite well do with less liquid milk. They had also arranged that such oranges as they were able to bring into the country should be sold in the first instance to children, and on a ration: but recognizing that it was inevitable that there would be a shortage of fruit they had taken special steps to secure fruit juices for distribution to children to make up any deficiency in their diet which, in the ordinary course of events, would be supplied by fruits in their natural state.

The principle that they were adopting to secure the health of children was to see that they should be fed where they were congregated. They had adopted the same policy with industrial workers. They needed widely different foods. Heavy workers needed more meat or cheese or fish than the office worker; in some forms of work more sugar was required than in others. They therefore proposed to allocate foods to industrial canteens and catering establishments according to a broad general classification of their needs. They would divide them into three groups, according as they catered for the heavy worker, the medium-heavy worker, and the sedentary workers or those engaged in light occupations, and provide food accordingly. In the case of miners they would before the end of this year cater in some measure for 85% of the mining population by having a supplementary ration served at the pit-head before the men went down the pit.

MEDICAL APPROVAL

Lord HORDER welcomed Lord Woolton's statement. He said that although so far no overt signs of malnutrition were to be observed, if we waited until those signs did appear we should wait too long. They would mean that grievous injury had been done which would leave a permanent scar for the rest of life. So far we had been fortunate. The Government evacuation scheme had undoubtedly acted as a deterrent against deficiency diseases of children. We did not know at present how far our children might be from a state of malnutrition; modern science gave us no means of measuring the safety of that margin, and for that reason he emphasized the time factor. The child was at the mercy of chance in any rationing scheme, and with most mothers knowledge marched a good way behind affection. That fact was one reason why family allowances, excellent in themselves, could not be expected to preserve the child against malnutrition nor to solve this problem of safeguards. The school was the only place where defects might be made good and hazards warded off. It was gratifying, therefore, that the Government had accepted that principle in full.

It was good to hear that Lord Woolton could see his way to supply the protective and body-forming foods necessary in preparing the diet of a child and to provide the requisite equipment, or a considerable amount of it, and that the local authorities were assured of a Treasury grant of such generous dimensions. Experience showed, however, that quite frequently and for a long time there was a lag at the periphery, even when direction had been given and action taken at the centre, otherwise one could feel quite optimistic about protecting the health of the children. He was not pessimistic, however, and he felt that this was a red-letter day in the annals of our children's nutrition. He did not doubt that the necessary encouragement and stimulation from the President of the Board of Education would be forthcoming, which would be necessary for the local education authorities, the teachers, and the parents to get the machinery going as soon as possible.

Lord ADDISON expressed satisfaction with Lord Woolton's statement. He was, however, very apprehensive about what was going to happen to the milk supply, and he hoped Lord Woolton would waste no time in considering that question.

INCREASED EXCHEQUER GRANTS

On the same day Mr. BUTLER, replying in the House of Commons to Mr. Lees-Smith, made a statement on the development of the school meals and milk services, with a view to ensuring the proper nutrition of children. He said that an

active campaign for the expansion of the provision of meals for school children had been conducted by his Department during the past year, and had resulted in doubling the number of children receiving midday meals daily. In consultation with the Minister of Food they had now decided on certain important measures which he hoped would secure an immediate and large development of this service. He had accordingly obtained the Chancellor of the Exchequer's approval to an increase of 10% in the rate of grant on authorities' expenditure on provision of meals, subject to an overriding maximum grant of 95%. He was further raising the minimum rate of grant from 50% to 70%. These steps would go far to remove any financial obstacle to expansion and would, he hoped, lead to a great increase and levelling-up of provision in all areas. The Minister of Food was also placing at the disposal of the local education authorities the facilities provided by the chain of cooking depots which were being set up near the large centres of population. Authorities would now be able to obtain from the depots substantial meals, which would be delivered to schools or school canteens in the neighbourhood in large and increasing numbers. He aimed at securing an increase in the proportion of children receiving milk under the Milk in Schools Scheme from some 60%, where it now stands, to as near 100% as possible. To this end it had been decided that the whole of the cost of the provision of free milk to necessitous children and of the handling of the milk in the schools should be reimbursed by the Exchequer.

Committees on Nurses' Salaries

Mr. ERNEST BROWN, answering Miss Lloyd George on October 16, said he had appointed Lord Rushcliffe chairman of the committee which he had set up for the purpose of drawing up as soon as possible agreed scales of salaries and emoluments for State-registered nurses employed in England and Wales in hospitals and in the public health services, including the service of district nursing, and for student nurses in hospitals approved as training schools by the General Nursing Council for England and Wales. The committee would consist of two panels, one representing employers and the other employees. He hoped to announce the names in about a fortnight. Some nurses were already covered by agreements made through the National Joint Council for Local Authorities. It would not be appropriate to refer to the committee the salaries of nurses employed in industry.

Asked by Mrs. Hardie about the appointment of a Scottish committee on nurses' salaries, Mr. TOM JOHNSTON said he had appointed Lord Craigmyle to be chairman of a similar committee for Scotland.

Tuberculosis: Increase in Scotland

On October 21 Mrs. HARDIE asked the Secretary of State for Scotland in what districts in Scotland the increase in notified cases of tuberculosis had taken place. Mr. JOHNSTON, in reply, circulated the following table:

Region	1938			1939			1940			41 weeks to October 11, 1941		
	Pulmonary	Non-pulmonary	Total	Pulmonary	Non-pulmonary	Total	Pulmonary	Non-pulmonary	Total	Pulmonary	Non-pulmonary	Total
Northern Area	149	124	273	174	100	274	165	88	253	129	79	208
North-Eastern Area	238	251	489	248	239	487	283	238	521	231	198	429
Eastern Area	498	386	884	449	342	791	531	318	849	442	264	706
South-Eastern Area	674	397	1,071	591	309	900	681	366	1,047	564	308	872
Western Area	3,234	1,614	4,848	3,195	1,450	4,645	3,540	1,494	5,034	3,182	1,139	4,321
Total	4,793	2,772	7,565	4,657	2,440	7,097	5,200	2,504	7,704	4,548	1,988	6,536

Mrs. Hardie pointed out that the rate had gone up in Glasgow by 20%, and that the increase had been mainly among the young working population. She asked if the Minister did not think that steps ought to be taken to look into the causes with a view to remedying them, particularly as the figures were still rising.

Mr. JOHNSTON said that they were taking what steps were available, although they were very limited, to examine this matter. The Medical Research Council had had their attention drawn to it. Replying to Mr. Kirkwood, Mr. Johnston said he thought that housing, evacuation, blackout difficulties, war strain, and a number of other causes had contributed to the increase in tuberculosis since the war began. Asked by Dr. Summerskill why, if his reasons were right, the increase should be larger among women, Mr. Johnston said it was possible that the strain of war conditions was greater among them than among men.

School Meals Service for Scottish Children

Mr. JOHNSTON on October 21 informed Mr. G. A. Morrison that he hoped to secure an immediate and substantial development of the schedule meals service in Scotland by arranging for advantage to be taken of facilities provided by the Minister of Food, and, where these were not available, by encouraging education authorities to make their own provision. Scots law at present permitted food to be provided for necessitous children only when the individual child was unable, by reason of lack of food, to take full advantage of the education provided. But malnutrition should be prevented, and a short Bill, designed to give education authorities power to supply food free of charge to necessitous cases without waiting for evidence of malnutrition, would be introduced in the near future.

Registrar-General's Reports

Miss HORSBRUGH told Sir Ernest Graham-Little on October 22 that publication of the Registrar-General's Reports was not discontinued, though wartime conditions had delayed the completion of the report for 1939. It had been decided to print in the first instance a limited edition of this volume, which would be held by the Registrar-General and made available for consultation and study by Government Departments and other bodies or persons having an acknowledged interest in its contents. The interests of medical research would receive sympathetic treatment under this arrangement.

Care of Child Air-raid Casualties

Mr. ANDERSON asked on October 23 what provision had been made for treatment needed by children injured by enemy action. Mr. Brown said children injured by enemy action and needing treatment in hospital were admitted to hospitals in the Emergency Hospital Scheme and provided with all requisite medical attention and care without charge, including, where necessary, the facilities afforded by the specialized treatment centres and the fracture organization. After discharge from hospital any necessary out-patient and domiciliary treatment was given. Amputation cases were referred to the Ministry of Pensions' limb-fitting organization, where suitable artificial limbs were provided and the child was trained in their use. On discharging child casualties, hospitals notified the Board of Education; the local education officers could thus be informed of the arrival of the child in their area, so that any special arrangements for teaching could be made.

Increase in Infant Mortality in Scotland

On October 26 Mr. JOHNSTON told Mrs. Hardie that the latest figures of infantile mortality in Scotland available were those for the first six months of this year. Comparing these rates with the average of the rates for the first six months of 1937, 1938, and 1939, the burghs showing the largest percentage increases were Dumbarton, Rutherglen, Hamilton, and Paisley. Considerable increases were found in the counties of Nairn and Sutherland, but the small number of births in the first six months of 1941 rendered any comparison unreliable.

Answering supplementary questions, Mr. JOHNSTON said that the Department was investigating the causes of infant mortality and endeavouring to prevent it. The increase of infantile mortality arose from a very large number of causes, all directly attributable to war conditions.

Edible Protein from Grass.—Answering Dr. Edith Summerskill on October 15, Major LLOYD GEORGE said research was proceeding on the production of edible protein from young grass. A greyish material looking like cheese had been produced on a purely experimental scale. Considerable technical difficulties must be overcome before large-scale production could be contemplated.

Medical Examination of Evacuated Children.—Mr. MESSER asked on October 16 whether there was a routine medical examination of all evacuated school children. Mr. R. A. BUTLER said routine medical inspection was being carried out in virtually all reception areas. All evacuated children who fell within the prescribed age groups were examined. In one or two areas a modified scheme of inspection had been adopted on the lines suggested in the Board's Circular 1523. The Board laid it down that the facilities provided for medical treatment of local school children in these areas should be equally available for evacuated children.

Return to Work of Unfit Miners.—Mr. RHYS DAVIES asserted on October 16 that ex-miners who had left the pits on medical advice were now directed by the Ministry of Labour to return to work underground against the advice of their own doctors. He further said that the medical officers of the Ministry often passed such men as fit for pit work, although when they reached the pithead the doctor employed by the colliery company declared them medically unfit. Mr. BEVIN refused to accept the suggestion that men were often wrongly certified fit for coal-mining work. In cases of doubt the practice was to call for independent medical evidence.

Death Rate in Wales among Young Women.—On October 21 Miss HORSBRUGH, replying to Mr. J. Griffiths, said that the death rates per 1,000,000 female population in Wales between 15 and 25 were as follows: 1935, 1,749; 1936, 1,737; 1937, 1,566; 1938, 1,423; 1939, 1,454. Figures were not prepared for the separate age groups 15 to 20 and 20 to 25 ; the corresponding 1940 record was not yet available.

Women Medical Students at London Hospitals.—Miss CAZALET on October 23 asked Mr. Brown, when drawing up his scheme for reorganization of hospital services, to consider the admission of women as medical students to those London voluntary hospitals which did not now accept them. Mr. BROWN said the point would no doubt be taken into consideration.

Notes in Brief

Twenty-two county councils in England and Wales have appropriated the whole or part of Public Assistance Institutions for public hospital purposes.

In England and Wales there were no deaths of children under 5 attributable to small-pox in 1938, 1939, and 1940. Deaths of children under 5 assigned to vaccination numbered 5 in 1938, 1 in 1939, and 6 in 1940. This classification does not rule out the probability that such deaths had other contributory causes.

Since the outbreak of war 141 officers and airmen have been invalided out of the Royal Air Force for defective hearing. From the Navy between September 1, 1939, and March 31, 1941, 287 men were invalided out for the same cause. Similar information for the Army is not available.

A general issue of anti-catarrh vaccine is not made in the Royal Air Force, but supplies are available in all cases where medical officers consider this treatment desirable.

Major Lloyd George told Prof. A. V. Hill on October 8 that the question of adding calcium to food, in view of its deficiency in the national diet, was still under consideration by the Ministry of Food. He added that the use of flour of 85% extraction was in accord with the advice given by the Scientific Committee on Food Policy.

Dr. Roderick MacLeod, past chairman of the Sunderland Division, B.M.A., has retired from the post of medical officer of health to Hetton District Council after twenty-five years' service, and has been given a Sheraton writing desk subscribed for by councillors and officials. In making the presentation the chairman of the Council said that Dr. MacLeod had devoted his time and talents without fear to the betterment of the people's health. Dr. MacLeod has also been head of the casualty service in the Hetton district, and he and Mrs. MacLeod recently received a plated entrée dish, suitably inscribed, as a gift from the casualty service personnel.

Medical News

A Chadwick Public Lecture on "Hygiene Technique in Building, or the Economic, Psychological, and Health Aspects of Surface Treatment" will be given by Mr. F. R. Hiorns, F.R.I.B.A., at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1, on Tuesday next, November 11, at 2.30 p.m.

The British Institute of Philosophy announces a lecture entitled "The Universe in Relation to Modern Physics," to be given by Prof. Herbert Dingle at University Hall, 14, Gordon Square, W.C.1, on Friday, November 14, at 3 p.m. Cards of admission can be obtained on application to the Director of Studies at University Hall.

Colonel Hugh Cairns will deliver a lecture on "Head Injuries" at the Weston Hotel, Bath, on Thursday, November 13, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

Prof. J. C. Drummond, D.Sc., Scientific Adviser to the Ministry of Food, will deliver a series of lectures on "Recent Advances in the Science of Nutrition and their Significance in Wartime" at the Royal Institution, 21, Albemarle Street, W., on Tuesdays, November 25 and December 2, 9, and 16, at 2.30 p.m.

A meeting of the North-Western Tuberculosis Society will be held at the Tuberculosis Offices, 352, Oxford Road, Manchester, on Thursday, November 13, at 3 p.m., when the president, Dr. G. H. Leigh, will speak on "Facts and Fancies and the Tuberculosis Death Rate." The honorary secretary, Dr. A. Fleming (11, Woodvale Road, Knutsford), reminds members of the Tuberculosis Association that they are cordially invited to the society's meetings.

The Czechoslovak Medical Association in Great Britain is holding a reception for English doctors, under the auspices of the Czechoslovak Institute in London, on the afternoon of November 11, at 18, Grosvenor Place, S.W.1.

At the annual general meeting of the Association of Anaesthetists of Great Britain and Ireland held on October 28 the following officers were elected for the coming year: President, Lieut.-Colonel Ashley Daly, R.A.M.C.; vice-president, Dr. C. F. Hadfield; treasurer, Dr. Z. Mennell; secretary, Dr. A. D. Marston.

Dr. F. W. Routley, National Commissioner of the Canadian Red Cross, announces that it has been arranged to dispatch to the Russian Red Cross as quickly as possible 100,000 dollars' worth of special medical supplies.

A pamphlet has been issued by the Ministry of Home Security giving guidance to all holders of radium on the precautions which should be taken to prevent dispersal of radium through enemy action. Sketches are reproduced showing the approved type of bore-hole and of steel container. Medical officers of health are asked to take all practicable steps to ensure that the necessary precautions are carried out. A copy of the pamphlet may be obtained on application to the Publications Branch, Ministry of Home Security, Horseferry House, S.W.1.

The National Baby Welfare Council has obtained information from evacuation areas throughout the country as to the number of children under 5 years of age still remaining in such areas. It has been ascertained that the figure exceeds half a million. The Council has called the attention of the Minister of Health to this fact and has requested that evacuation shall be made possible to all children under 5 years of age whose parents are desirous of sending them to safer areas.

The July issue of the *South African Medical Journal* is a quarterly scientific number, including articles on endemic fluorosis in the Pretoria district, climatic strain in man, and antigenic qualities of certain strains of avirulent *B. pestis*.

Dr. Luzius Ruedi has succeeded Prof. Ulrich as director of the ear, nose, and throat clinic at Zurich.

No. 42

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended October 18.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	107	7	32	2	8	144	16	36	—	3
Deaths		—	1				—	3		
Diphtheria	1,002	48	309	23	35	1,347	62	386	41	33
Deaths	11	1	6	1	2	44	1	10	3	1
Dysentery	143	12	93	—	—	47	2	60	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	4	1	1		—	2	—	—		—
Deaths		—	—				2	1		
Enteric (typhoid and paratyphoid) fever*						37	2	4	6	2
Deaths						—	—	—	—	1
Erysipelas		—	40	2	2		20	54	5	6
Deaths		—	—				1	2		
Infective enteritis or diarrhoea under 2 years										
Deaths	46	—	24	25	8	38	5	14	13	4
Measles	783	59	16	57	3	11229	215	491	—	11
Deaths	1	—	—	—	—	25	—	4	3	—
Ophthalmia neonatorum	86	3	22	1	1	86	2	21	—	—
Deaths										
Paratyphoid	62	4	7	1						
Deaths	—	—								
Pneumonia, influenzal†	624	18	4	1	3	732	61	9	1	3
Deaths (from influenza)	12	24	1	—	2	14	3	2	—	—
Pneumonia, primary			159	3				183	8	
Deaths		—		7	—		65		9	1
Polio-encephalitis, acute	2	—				—	—			
Deaths		1					—			
Poliomyelitis, acute	50	1	2	1	1	36	—	6	—	—
Deaths		—	—				—	—		
Puerperal fever	4	4	13	1	—	1	1	17	1	1
Deaths		—					—			
Puerperal pyrexia	157	10	14		4	143	3	27		1
Deaths										
Relapsing fever	—	—				—	—			—
Deaths										
Scarlet fever	1,195	43	233	52	32	2,149	86	247	74	45
Deaths	2	—	—	—	—	2	—	—	—	—
Small-pox	—	—	—		—	—	—	—	—	—
Deaths		—	—	—	—		—	—	—	—
Typhoid	16	2	2	7	—					
Deaths	1	1								
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,979	222	63	21	7	1,499	9	119	—	21
Deaths	10	4	4	1	—	8	1	—	1	—
Deaths (0–1 year)	307	27	74	41	18	300	29	67	31	11
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,677	502	548	149	104	6,594	2,003	613	167	106
Annual death rate (per 1,000 persons living)			11·9	9·9	‡			12·4	11·1	9·3
Live births	5,240	474	814	255	210	5,834	738	840	337	222
Annual rate per 1,000 persons living			16·6	16·9	‡			17·0	22·5	19·4
Stillbirths	180	18	37			217	13	46		
Rate per 1,000 total births (including stillborn)			43					52		

* Except for Northern Ireland, typhoid and paratyphoid are now notified separately.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

The number of notifications of infectious diseases in England and Wales was smaller than in the preceding week. The only exceptions were whooping-cough, with an increase of 9 cases, and poliomyelitis, with a relatively large increase of 12. Scarlet fever and dysentery, with a decrease of 141 and 64 cases respectively, were the only infectious diseases that showed a large deviation from the numbers recorded in the previous week. The incidence of infectious diseases in Scotland was smaller than in the preceding week: scarlet fever, measles, and whooping-cough declined, but there was a small increase of 9 cases of diphtheria, and the number of notifications of cerebrospinal fever was 1 in excess of last week's total.

Poliomyelitis

Fifty cases of poliomyelitis were notified in England and Wales during the week, this being the largest weekly total recorded during the year. The rise was the result of a recurrence of cases in Berkshire (3), Buckinghamshire (3), and Oxfordshire (4), after an interval of one week without any cases, and a rise in the notifications, from 2 to 8, in Surrey. Multiple cases were notified in the administrative areas of Berkshire (New Windsor M.B., 2); Oxfordshire (Oxford C.B., 3); Suffolk West (Bury St. Edmunds M.B., 2); Surrey (Croydon C.B., 2; Godalming C.B., 2); Sussex, East (Brighton C.B., 2).

Dysentery

The notifications of dysentery in England and Wales showed a reduction of 64 cases compared with last week as a result of the decline in the outbreaks in Kent and Somersetshire, where only 4 cases and 1 case respectively were notified, compared with 64 and 18 in the preceding week. Twelve cases, an increase of 6, were returned from Northamptonshire (Northampton R.D.), and 11 cases, an increase of 8, from Epsom and Ewell M.B. (Surrey). A further 21 cases were notified during the week in Bristol C.B. Nine administrative areas contributed to the 26 cases returned from Lancashire.

The notifications in Scotland were 7 fewer than in the preceding week, and, of the 93 cases notified, 35 were reported in Lanark County. The number of notifications increased in Edinburgh, from 10 to 18, and decreased in Glasgow, from 21 to 9, and in Dundee, from 14 to 11.

Scabies

The reports of local medical officers show that scabies is still very prevalent. Although no comparative figures are available it seems that the incidence of this complaint has increased considerably since the war started. It had been steadily increasing in the immediate pre-war years, and the large number of infected persons in some areas is a matter of concern to the local authorities.

Week Ending October 25

The number of cases of infectious diseases notified during the week in England and Wales included scarlet fever 1,224, whooping-cough 1,985, diphtheria 1,017, measles 745, cerebrospinal fever 88, poliomyelitis 50, dysentery 139, paratyphoid 53, and typhoid 23. Fifteen deaths were attributed to influenza.

L. Pelner (*Amer. J. Dis. Child.*, 1941, **62**, 358), who records two personal cases, illustrates the rarity of relapses in measles by the fact that Rolleston and Ronaldson noted only nine examples among 11,749 cases of measles, and claimed that in several cases of so-called relapse the prodromal rash had been mistaken for the primary attack. In Pelner's first case, which was that of a boy aged 8, the first attack occurred at the age of 26 months and the second at 8 years. Severe abdominal pain occurred in both attacks. In the second case, which was in a girl aged 9 years, the first attack had appeared at the age of 6 years. Both attacks were mild.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Vocal Resonance and Fremitus

Dr. MARY D. SHERIDAN (Manchester) writes: Will any physiologist be kind enough to explain to me the exact physical explanation of vocal resonance and vocal fremitus? Neither of them, of course, occurs with voiceless consonants, so that they must both have something to do with the vibration of the vocal cords during phonation, but I should be grateful to have a more exact explanation.

Income Tax

Income Arising Abroad

R. S. has recently acquired an income in one of the Dominions which he had not intended to transfer to this country during the war. He is, however, informed that the income is chargeable here whether it is remitted or not.

*** That is correct—assuming that the income does not arise from a trade, etc., or employment carried on by our correspondent. We understand, however, that in present circumstances the Revenue authorities are willing to leave the amount of tax involved in abeyance unless and until the income is remitted. We suggest that if practicable R. S. should call and explain the matter to the inspector concerned.

E.M.S.: Billeting Allowance

A. H. inquires whether billeting allowances received in cash are assessable.

*** This would seem to be the case, unless the particular circumstances are such as to show that the amounts received are in the nature of travelling or subsistence allowances. The argument in favour of the second alternative would be strengthened if in the particular case the place of employment were subject to fairly frequent change.

Division of Partnership Liability

A. M. inquires as to the method of adjustment, as between two partners, of the amount of tax charged upon the firm.

*** The firm as such is legally liable to the Revenue for payment of the tax. But the basis of division of profits is usually incorrect as applied to the sharing of the tax charged (e.g., one partner may be married and the other single), and it is customary for the individual shares of each partner to be agreed with the inspector of taxes and for the partners to pay their respective shares into the firm's bank account.

Local War Committee Bureau

H. B. inquires whether the authorities can require a bureau to supply a statement of the payments made to individual practitioners—both private and insurance fees are involved.

*** We do not see on what legal grounds such a statement could be compelled, seeing that the practitioners are not in the employment of the bureau and that the sums passed on are gross receipts rather than "income." We suggest that if the authorities ask for a statement they should be requested to quote the legal authority for their demand.

Life Assurance Relief—Restriction

"K.L.B." wishes to take advantage of Section 4 of the Finance Act for 1941, providing that the "total income" by which the one-sixth restriction of the allowance can be measured may be related to the year 1938-9. Does that mean the actual income for 1938-9 or the amount assessable for that year—on the basis, as regards salary, of the actual amount for 1937-8?

*** The effect of the section as modifying the main provision—Section 32 (3) (*a*) of the Income Tax Act, 1918—is that the one-sixth may be applied to the total income for the year 1938-9 from all sources "estimated in accordance with the provisions of the Income Tax Acts." The result is that so far as income from salary is concerned the amount affected is the salary for 1937-8, as that income must be "estimated in accordance with the provisions of the Income Tax Acts" for 1938-9 on the previous year's basis.

Honorarium from Hospital

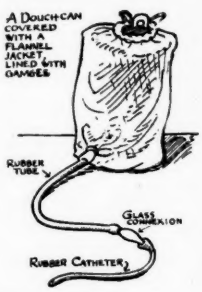
"A.'s" income is derived partly from salary, assessed under Schedule E, and partly from private practice, assessed under Schedule D. He also has an honorarium of £100 per annum from a hospital. Under which schedule is the honorarium assessable?

*** Under Schedule E. There is, however, a practice of long standing under which such honoraria are included with the general practice receipts if that is more convenient and does not materially affect the amount of tax payable—as it would, for instance, if the appointment were a new one.

LETTERS, NOTES, ETC.

Hot Drinks for Trapped People

Dr. MAURICE E. J. PACKER, M.O. in charge of No. 1 Mobile Unit, Bristol, writes: Our experience of air raids has shown us the need for some apparatus that will enable us to give hot stimulating drinks to patients (shocked or otherwise) who are entrapped. My original suggestion was some rubber tubing attached to a feeding cup, but Sister Vetlesen has made the great improvement shown in the diagram. As so many Morrison shelters are now in use, the scope for such apparatus this winter will be greater than ever.



District Nurse for Home Guard Casualties

The Editor of the *Nursing Mirror* writes: Most writers are agreed that the present medical and surgical provision for Home Guard casualties is insufficient, and that casualties are most likely to occur in isolated country districts where there are few facilities for coping with them. It is being wisely suggested that local Home Guard medical officers should make urgent and speedy efforts to remedy this, and equip casualty collecting posts where such are needed. May we suggest that they will find most competent assistants in the local district nurses—women who, by training and experience, are equipped to cope with any emergency, to assume responsibility in the absence of a doctor, and to improvise when orthodox material and methods are not available. The district nurse knows the neighbourhood, the buildings, the people. She can advise on choice of post, and organize her own local team of helpers. Most important of all, she can be left under instructions to deal with the casualties while the sorely pressed M.O. goes to other places urgently needing him. The doctor could have no more reliable deputy.

Cigarette Smoking and Tachycardia

Dr. F. GORDON CAWSTON (Durban) writes: Tachycardia in the Tropics is frequently associated with bowel infection or poison absorption, for which small and repeated doses of an aperient are to be preferred to active purgation; but the report by Dr. Claude Fothergill (December 23, 1939, p. 1253) that a discontinuance of cigarette smoking assists in bringing the pulse rate back to normal in soldiers convalescing from enteric deserves careful consideration in view of the large quantity of cigarettes contained in comforts for the troops and the possible absorption of poisonous constituents other than nicotine.

A Newspaper's Inquiry

Dr. H. SUGARÉ (Leeds) writes in reply to Dr. E. Starling, who was asked by a local newspaper to confirm the birth of a child (October 18, p. 568): This inquiry is done probably in order to prevent the possibility of a hoax. On the birth of our child some eighteen months ago I 'phoned the local evening paper to insert an announcement of the event. This was only accepted after they in had in turn 'phoned my number—to confirm, no doubt, that it *was* Dr. S. that was speaking. The explanation given me of such a procedure was as mentioned above.